

871-1111  
7952

# THE AUTOMOBILE AND MOTOR REVIEW

NEW YORK

July 27, 1902  
CLASS OF 1902  
37351  
COPY B.

SATURDAY, SEPTEMBER 6, 1902

CHICAGO

398  
19

EVERY day in Chicago from 2,000 to 2,500 persons ride in public service automobiles which have come to displace the horse-drawn carette and various forms of horse-drawn 'busses. Seventeen motor vehicles divided into six lines and making

## The Carette's Growing Rival

The automobile lines are at present chiefly employed in carrying passengers to and fro between the various depots and the center of the retail shopping district.

tween its store and respectively the Northwestern, Union and Grand Central railway stations. The American Motor Coach Co. conducts, under contract for Mandel Bros., a line of gasoline coaches running between the retail store of the



ONE OF THE COACHES RUNNING BETWEEN THE NORTHWESTERN DEPOT AND MANDEL BROTHERS' STORE

quick trips through the crowded shopping districts represent the beginning of actual and direct competition between the old and new sources of power in metropolitan activity.

They are operated by two companies, one employing electric vehicles and the other gasoline cars. The retail firm of Schlesinger & Mayer owns and conducts three lines of electric wagonettes, running be-

latter concern and the Northwestern depot; a line of pleasure vehicles which depart from the Palmer House every morning, afternoon and evening for twenty-mile runs through the parks, and a

line chartered by the Chicago Yacht Club to carry members from the business district to the clubhouse and return.

This is the beginning of a public automobile service which may in time drive the horse omnibuses and wagonettes from the streets of Chicago.

Chicago is not an uptown and downtown city. Its retail business mart is clustered in almost the center of the town and in three directions spread the gradually thinning residence neighborhoods, beyond which a great rainbow of suburban towns circle the city. These towns pour their daily thousands into various city depots which border on the business center, but none of which is within convenient walking distance of the great retail stores of State Street. Street car lines are ineffective as connecting links between the depots and the doors of the trading establishments, the insurmountable difficulties in the way of satisfactory service being lack of direct car track lines and the necessity for slow and interrupted running of the cars.

#### Old Carettes Uncomfortable

To meet the demand of the daily contingency of suburban shoppers and of country folks in for their periodical purchasing venture, there were established several years ago lines of horse-drawn omnibuses connecting directly the most important depots with the several of the largest stores. These lines received a generous patronage and proved valuable to the stores as well as a convenience to the patrons, as they brought probable purchasers directly to the doors of the retail establishments. But they have never been more than a compromise between walking and comfortable riding. Both the wagons and the horses represent all degrees of design and construction, and so springless and shaky have some of the wagons become, and so tottering and decrepit do some of the horses appear, that several years ago a bright daily paper paragrapher discovered that their jolting trips over the rough pavements were well characterized by the readjusted phrase, "They sleep while you work."

Such has been more or less the general conception of the Chicago carette system—a thing to be used out of necessity and not from choice. Now there exists a choice and at three, at least, of the city depots the incoming shopper may adopt the modern automobile with its comfortable seats, large rubber tires and rapid speed, or may stick firm to the relics of the "old days." At one depot there is a choice between the automobiles, also, for drawn up by the sidewalk to meet every train is an electric wagonette, a gasoline coach and a yellow carette with old-fashioned horses and an old-fashioned "caller," who lustily bellows at all approaching crowds in a strenuous endeavor to prevent the rural and suburban visitors from experimenting with the horseless carettes

which have sacrilegiously invaded his province. The selection of the mode of travel is entirely one of personal taste, for while each of the lines connects with a different store, the stores are all in a row on State Street and the destination of the vehicles is practically common.

#### The Electric Line

The oldest and most familiar automobile depot wagons are those operated by Schlesinger & Mayer. The service was established three years ago last June, when the then existing Illinois Electric Vehicle Transportation Co. put in a line of three electric wagonettes. The vehicles were run for a year under the control of the transportation company. Then Schlesinger & Mayer purchased the vehicles and have since operated the line for themselves. Three additional vehicles were added and eventually the number was increased to ten. The vehicles are Columbia wagonettes and most of them are supplied with Exide batteries. They have open canopy tops for the summer and closed tops for the winter.

#### Make Quick Trips

Nine cars are now in daily use, the tenth being kept as an emergency reserve car. On account of the heaviest suburban traffic being at the Northwestern Depot, five vehicles are run between this station and the store, while two vehicles go to the Union Station and two to the Grand Central. The fare each way is the regulation nickel.

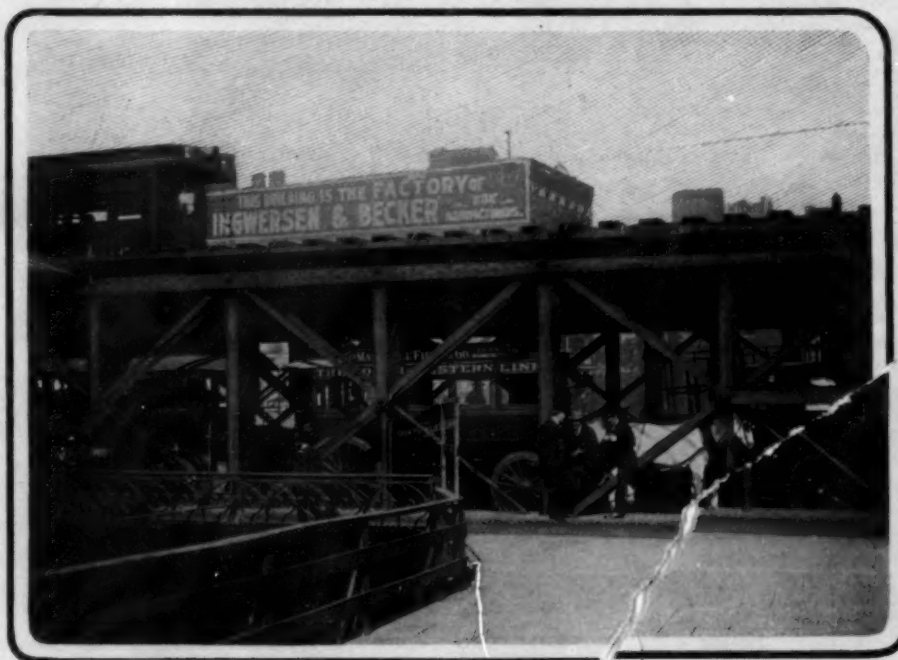
In the morning all of the wagonettes go directly to the depots where they meet the 7:45 o'clock suburban trains. From

of the incoming morning trains and their hurrying passengers. Between 9:30 and 1 o'clock the carriages run on a 15-minute schedule. A round trip time of 20 minutes is allowed regularly for the cars, but in the hurry-up work this much is not needed, as the actual running time is generally 7 minutes each way, the depots being about equally distant from the store. The run in each instance is about a mile and a quarter long and through congested streets all of the way.

When the tide turns homeward in the afternoon the quick runs are again made, and often there is little attempt to stick to the schedule or time table other than to be sure that there is always a vehicle on hand at the schedule time. W. J. M. Adams, who has charge of the line and who personally starts all of the carriages at the store, has found it impossible to make a hard and fast time table for the running during the heavy hours. In some instances the demands for seats has been so pressing in the afternoon that he has sent five wagonettes away in four minutes, each loaded with its full quota of passengers. The whole problem during the rush hours is to adjust the running of the wagons to the immediate needs.

#### Carry 1,500 a Day

Each carriage is carefully checked at arrival and departure and account kept of its passengers. As this work devolves upon the starter he naturally has his hands full endeavoring to run the vehicles so that there will be no break in the continuity of the service and so that the carriages will leave the store at correct times to



TRANSPORTATION LINES AT NORTHWESTERN  
Take your choice of Carette, Electric Wagonette, Gasoline  
the Shopping District

RAILROAD STATION  
Coach, or Elevated Train for

this time until about 9:30 they make as quick trips between the depots and store as possible, in the endeavor to meet all

land passengers at the stations in time for them to catch the desired outgoing trains. This necessitates a knowledge of scores



of trains, both suburban and regular, for it is of the starter that the women involved ask their numerous questions.

The service stops at 6 o'clock in the evening, when the last trip to the stations is made. An average of fourteen round trips per day is made by each vehicle, while the average total of passengers carried per day by each wagonette is about 175, giving a total daily average of 1,500 passengers carried by the system. The limits above and below the average number of passengers per day for each vehicle is somewhat more elastic than the total average, which sticks pretty well to the same point on the scale. A vehicle may carry only 110 or 115 passengers one day against as high as 200 to 230 on another, or against an equally high run of another vehicle the same day. The two buses running to the Union Station average about 370 passengers a day for each or 185 for each. As a fair sample of the daily service and an illustration of the variance in the daily earnings of the different carriages the totals for each of the nine cars on Monday, August 25, are given below:

142, 220, 115, 128, 136, 138, 156, 195, 163; giving a total for the day of 1,395 passengers or \$85.65 in earnings.

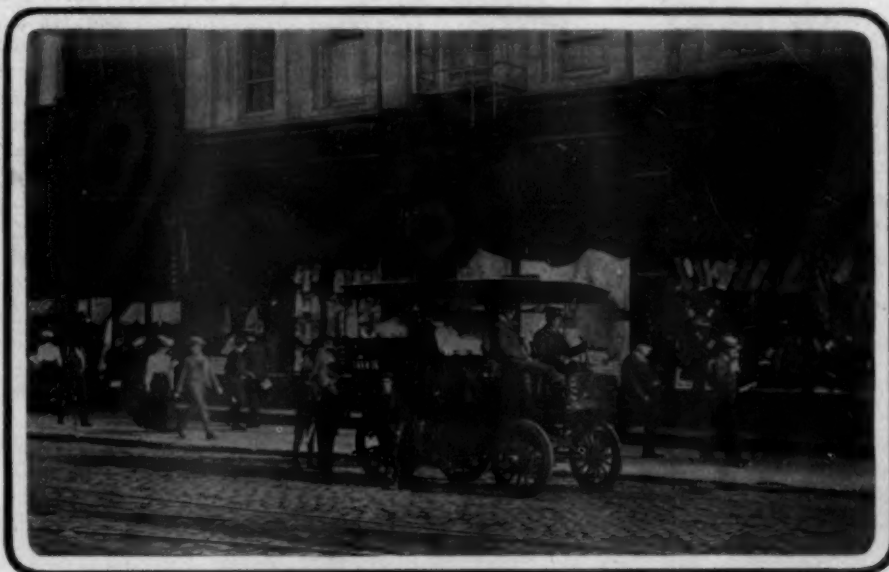
#### Suburbanites Regulate Patrons

The principal portion of the patrons of the line represents suburban shoppers who come frequently, and many of them almost daily, to the city. There are also many country or out-of-town persons among the passengers—these probably representing about 20 per cent. of the total. On account of the fact that they are more or less unacquainted with the city the line proves especially beneficial to such persons, who have, indeed, always been prominent among the carette patrons, and have displayed already a preference toward the automobile now that it is in actual competition with the horse-drawn conveyances. The vehicles are also especially attractive to those who have never ridden in an automobile, and, while not constantly recurring, it frequently happens that the carriages pick up passengers both at the depots and stores who stick for a round trip ride in order to thoroughly analyze the sensation and feel confident of having formed an exact opinion concerning the merits of the vehicle. These are mainly country folks; the first-time riders from the suburbs, being more discreet, if not so honest, veil their impressions—at least until they have reached the home dinner table.

Another item in the patronage is that of business men. There are in the immediate vicinity of the retail store, from in front of which the vehicles leave for the depot, several sky scrapers which during the day shelter hundreds of men living in suburban towns. These have been accustomed to walk to the depots, but since the permanent establishment of the automobile system many of them have taken advantage of it, both to save walking and to utilize in their

offices the difference in time allowed for reaching the depot to make the proverbial suburban rush for the outgoing train. It

would never be seen again. But the suggestion that if he persists in keeping it on the seat he will have to pay another fare



ELECTRIC WAGONETTE READY TO LEAVE RETAIL CENTER FOR THE STATION

was not for such a patronage that the line was established, the original and present intent being, of course, to carry customers and probable customers to and from the railway stations. The business men, however, constitute a steady trade, which considerably increases the earnings of the line and consequently enhances its general effectiveness.

About two-thirds of the passengers now carried are regular patrons, while it is estimated that about half of those who are carried from the depots enter the store to trade. The number who eventually become patrons of the store through the indirect advertising value of the line cannot, of course, be well determined, but it is probable that it is considerable.

#### Little Trouble Over Baggage

But few of the passengers, not more than 10 per cent., request that they be put down at points along the route between store and depot, and also there is not more than the same percentage of pick-ups who hail the car at intervening points. The business of the route is to carry passengers between the center of the shopping district and the depots as quickly as possible, and it has become a broadly recognized institution as such.

Passengers are not permitted to carry more grips or bundles than they can conveniently hold between their feet or in their arms unless there is room to pile them on the footboard in front of the driver's seat. Little difficulty is encountered in this direction, however, on account of the prevailing custom of having the store deliver or forward the goods purchased. Occasionally a passenger will stick to a satchel grimly when requested to allow it to be placed in front of the driver's seat, seemingly suspicious that should he do so it

for it, generally causes him to loosen his hold like lightening.

#### On Pleasure Bent

This is the daily street service of the Schlesinger & Mayer line. Daily also some of the wagonettes serve other and generally more pleasurable uses. Two wagons a day, on an average, are chartered for evening trips, being engaged by parties for a fixed sum. The most common of the pleasure uses is that of touring Chicago's magnificent park system. A novel and somewhat unique use for which the wagonettes have been frequently engaged this summer is that of making what are termed Continental Trips. The affairs have generally been arranged by church people and the participants from the congregation are carried about in the automobiles from one home to another, each lawn being decorated and illumined in a fashion intended to depict some different nationality. A series of lawn parties are thus combined with automobiling. The chartering of the wagonettes for special purposes is entirely separate from their daily business purposes, being done simply to increase the income derived from them.

#### Stabling the Wagonettes

The vehicles are stored, charged and cared for at 179 Michigan Ave., in the old Leroy Payne stables, which were formerly the headquarters of the defunct Illinois Electric Vehicle Transportation Co. The batteries are charged from an Edison current, the charging being done both at night and during the noon lunch hour of the drivers. The force at the stables comprises a repairer and battery man for the day time, and the same with a washer at night. Extra batteries are kept on hand and but little trouble is experienced in keeping nine vehicles in daily service. No data is obtain-

able concerning the exact operating expenses of the line as it has not been deemed necessary to ascertain such figures. For instance, provision is made at the store for emergency charging while the vehicles are standing between trips, and the current used for this purpose is charged to the light account of the store, from whose circuit it is taken. Established as a combined convenience for store patrons and a drawing card for the store, rather than as a separate business enterprise, it has not been considered necessary to go closely into the matter of profit. After three years the service has been deemed satisfactory and has become a permanent feature of the business.

## The Gasoline Line

The other lines are of recent inauguration and are conducted on a different basis from that of Schlesinger & Mayer. The American Motor Coach Co. was organized some time ago for the purpose of operating gasoline coaches and other vehicles in Chicago. The company has purchased its vehicles of the Chicago Motor Vehicle Co., the large ones being the well known coaches and the smaller ones being of the open top brake pattern. The lines now in operation are the beginning of what is hoped to be an extensive system embracing important routes of travel not convenient to street car routes.

The coach line operated by the company for Mandel Bros. and running between their store and the Northwestern Depot comprises four vehicles and has been in operation about a month. The unusual appearance of these roomy coaches has excited more or less comment on the streets and a fair patronage for so young an institution has been secured. The route is slightly handicapped during the warm weather by the fact that though practically open when all of the windows are down, the coaches do not possess an open appearance. On account of this the company expects to next summer put on open tops. The coach structure will be welcomed when the snow begins to fly, however, as provision is made for heating by a hot water system.

## Service to Be Increased

The coaches each carry from fourteen to sixteen passengers comfortably, though there is room for several more by crowding. The schedule of running is similar to that of the electric wagonettes, a 15-minute schedule being maintained, and the coaches run faster during the rush hours. About twelve round trips a day are made by each coach, and at present each coach is said to average about ten passengers per trip, making a total of about 500 passengers a day for the four vehicles.

## For Lake Front Use

The Chicago Yacht Club line has become highly useful. The clubhouse being situated on a break-water opposite the foot of Adams Street, is not conveniently reached. The Motor Coach Co. operates for the club an open brake which makes trips at fifteen-minute intervals between the corner of

Michigan Avenue and Jackson Boulevard and the water's edge, where it is met by a boat or launch which carries the passengers to the clubhouse. During the middle of the day the brake starts from the vicinity of the Board of Trade building, in which neighborhood many of the yacht club members have their offices. The route is well patronized and as high as 300 passengers have been carried in a day. The company charters the brake to the club for its exclusive use and the club sells ticket books to its members.

## Excursions Through Parks

Two open brakes are used on the pleasure line starting from the Palmer House for trips through the parks. The company operates this line in conjunction with the theater ticket agent in the Palmer House, agreeing to take the brake out for a trip for a specified sum. The ticket man secures passengers for the ride, selling the tickets at his own figure. The price charged by him for a twenty-mile ride through either the north or south park systems is \$1.25. Trips are made each forenoon and afternoon and generally in the evening also.

The Motor Coach Co. states that its present lines of service will not only be increased, but new lines will be established as well, and that it is consequently negotiating for a large stable which can be thoroughly equipped for the purpose of carrying for a large number of such vehicles as those now in operation. At present the vehicles are kept in the rear of 370 Wabash Avenue.

## The Carrette Horse Doomed

Viewed as a whole the situation in Chicago appears favorable for the rapid growth of the trackless automobile street car, carrette or whatever one chooses to call such vehicles for public service. With one line in constant operation successfully for three years, and one company intending to promote such lines broadly, with the automobiles at the railway stations going away loaded, while the horse cars repeatedly carry off groups of one or less, it is easy

to conjecture that, the emancipation of the street car horse having come about through the adoption of mechanical power, the relief of his equally unfortunate brother, the carrette horse, will be brought about likewise.

## THE ADVENT OF THE LOW WHEEL

Low wheels came in by degrees. The vehicle world, usually so quick to snap up anything which had the appearance of being good, was peculiarly slow in adopting them. To produce a rigid wheel, and at the same time preserve the elasticity so necessary to an easy riding vehicle, has been the aim of manufacturers for years. It was not until the advent of pneumatic tires that the opportunity of accomplishing such a result became possible. The change from high to low wheels required three distinct departures from the ordinary methods of wheel building, and manufacturers seemed indisposed to take all three at one jump. It was necessary, first, to change from high to low; second, to change from wood to wire, and third, to change from small to large tires. The result was that some builders reduced the circumference, but clung to wood, not being able to figure out the principle of the suspension wire wheel, or understand wherein its superior strength lay. Others changed from wood to wire, but refused to adopt the only kind of tire which made low, rigid wheels possible. So we had a series of unique experiments, which proved nothing save that the idea was right, and their methods were wrong. After all is said and done, and manufacturers, dealers and users have tried the low wheel idea in all its various forms of construction, these facts will remain unshaken and undisturbed; low wheels are only practicable when pneumatic tires are used; the best low wheels are the suspension or wire wheels, and such wheels equipped with good pneumatic tires of the proper size will out-ride, outwear and outclass any other kind of wheel whether high or low.—*The Carriage Dealers' Journal.*



GASOLINE BRAKE IN THE SERVICE OF THE CHICAGO YACHT CLUB



# The Gasoline Vehicle

## XI—SPEED-CHANGING SYSTEMS\*

*Concluded from Last Week*

One other system, American in popularity if not in origin, remains to be described before we turn to French practice. This is the so-called planetary system, in which the slow speed and reverse are each obtained by interposing pinions between a large internal gear and a central pinion on the power shaft. Of this system the most typical example is the Upton gear, which is here illustrated in section.

### The Upton Change-Gear

In the drawing (Fig. 1) A is the power shaft, which may be connected to the engine shaft in any convenient way. B is a sprocket pinion, for which a gear or any other suitable power-delivering device may be substituted. C and D are pinions integral with the shaft A, and meshing each with three spur pinions E and F, which in turn mesh with internal gears G and H. I is a clutch-tightening dog, fulcrumed in a disc, J whose hub is keyed on the shaft and revolves therewith. This dog actuates a flat spreader K, which expands the split ring L, also carried by J, tightly against the internal surface of a drum M. This drum is loose on shaft A, and in it are fixed the studs carrying the pinions E. Acting on the periphery of M is a friction band N, anchored to a fixed point, in the case surrounding the gear. When this band, normally loose, is tightened, the drum is rendered stationary and the pinions E, acting as intermediates, impart to the internal gear G a motion in the direction opposite to that of A, and, of course, slower in proportion as the pitch diameter of G is greater than that of C. Now, gear G is rigidly fastened to the irregular flanged disc O, and the latter to disc P, integral with the sprocket pinion B. Consequently, when band N is tight, the resulting reverse mo-

tion of G is imparted unchanged to pinion B, and thence to the rear wheels.

To obtain the slow forward speed, band N is released, and another band Q is tightened. This band acts on a ring R, turning loosely on disc O and carrying, rigidly fastened to itself, the second internal gear H. This gear meshes with the pinions F, which are carried on pins held in the discs O and P. When the reverse is in action, band Q is loose, and H and R turn idly at whatever speed is imparted to them by F. When, on the contrary, N is loose and Q is tight, the pinions F are compelled by D to roll, as it were, along the path furnished by the now stationary gear H, carrying O,

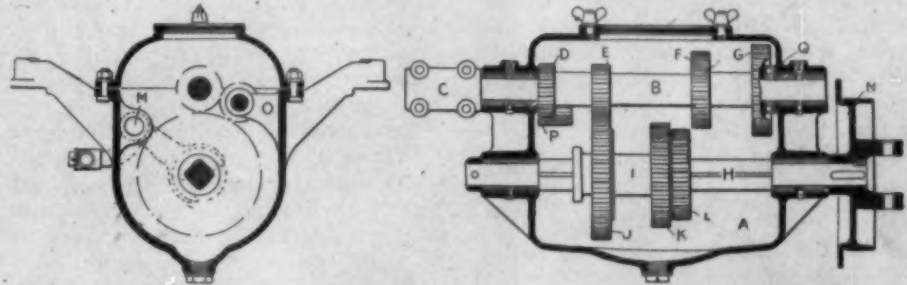


FIG. 2

P, and B around with them as they travel. As those teeth of pinions F which are in contact with H are momentarily stationary, while the opposite teeth in contact with D are moving at the pitch-line velocity of D, it follows that the linear velocity of the pins on which the pinions F are carried is exactly half the pitch-line velocity of the teeth D. From this fact the speed in r.p.m. of B may readily be calculated for any given sizes of D and F. In the Upton gear it is one-quarter the speed of A.

For the high speed, bands N and Q are

between M and J and O, and the friction of the shaft itself at its four points of bearing, besides that of B in its bushing. The planetary gear is not quite as well adapted to high speeds as most other systems, as its momentum is greater, making it more difficult to effect a quick stop. On the other hand, it has achieved great popularity as a speed device in connection with motors of moderate speed, as in such cars as the Oldsmobile, Long Distance (1901 model), Buffalo, Duryea, etc. In all these cars the gear shaft is coupled to the engine shaft, and a chain from the sprocket pinion runs directly to the rear axle.

### A Typical French Speed Change

A simple form in the sliding gear transmission commonly used in France is the Clement, illustrated in Fig. 2. As in the gear just described, a casing A encloses the whole mechanism, so that the gears run in a bath of oil. The shaft B has at C a flexible coupling connecting it with a friction clutch in the flywheel of the motor. The gears D, E, F, G, giving respectively the reverse and the slow, middle and high speeds, are usually integral with the shaft, though they may be renewable for wear. Shaft H is square between bearings, and on it slides a quill I to which are secured the three gears J, K, L. This quill is shifted by a fork, seen dotted in the end section, which is carried by a sliding rod M oper-

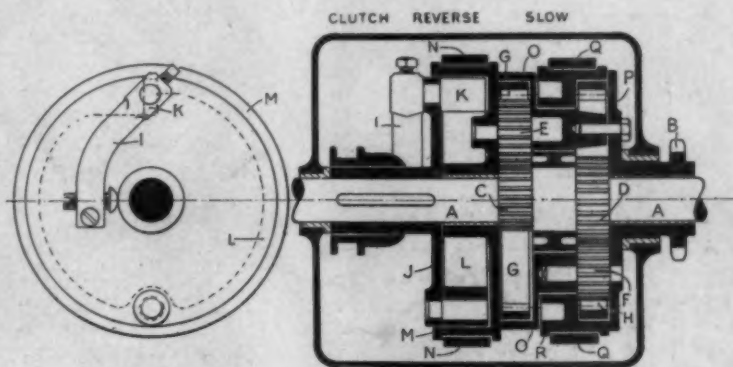


FIG. 1

both released, and the clutch is tightened, causing the drum M to revolve at the same speed as A. Consequently there can be no

\* The series on "The Gasoline Vehicle" was begun in the issue of June 7. Although treating of a common subject, the several articles will be self-contained, so that any of them may be read without reference to others of the series.

ated by suitable connections outside the case. In N are combined a brake drum and one-half of a universal joint for transmission to the rear axle. Near the forward (left) end is a bracket O, supporting a wide intermediate pinion P, which meshes with D. It is also so placed as to mesh with J, when the latter is moved past the slow forward speed, so that the same gear J is available for both the slow speed and the reverse.

Although the drawing does not show it, it is customary to bevel slightly the ends of the gear teeth where engagement takes place, so that they will go more easily into mesh. This also reduces the deformation of the ends of the teeth by battering, which is always more or less unavoidable, and the same purpose is served by hardening the teeth, the gears being cut out of tool steel. By the use of high-carbon steel the gears are made very small and light for the power they transmit, but they wear quite rapidly, and frequent renewal of the gears is a recognized feature of most French cars.

Although the gear just described, being used in a light car, has but three forward speeds, it is customary in the touring and racing cars to employ four. When this is done the sliding gears are frequently on two "quills" instead of one, to avoid the necessity of passing through intermediate speeds in going from the fourth to the first or the reverse.

#### The Flywheel Clutch

With the sliding gear system, the method of effecting a change of speed is first, to release the clutch between the first gear shaft and the motor, then to shift the gears, then to engage the clutch again. Thus, if the car has been started on the first speed, with gears E, J, in mesh, shafts A and H are turning at speeds inversely proportional to the diameters of those gears. Now, to engage gears F and K, either shaft A must turn slower or H must turn faster. But H is connected or geared to the rear wheels, and it is already turning as fast as the first speed will make it; therefore, in meshing F and K, shaft A must be abruptly retarded at the instant of engaging, to be, of course, accelerated as soon as the clutch is re-engaged. If shaft A and the parts connected with it have little weight, there will be little shock when the gears are shifted; if they are heavy there will be considerable shock and injury to the teeth.

For this reason it is evidently essential that the clutch be fully released every time a shift is made—whether from low to high or vice versa; and, as but one clutch is used for every speed, it is equally evident that this clutch must be of liberal dimensions. Further, the part of the clutch connected with shaft A must be as light as possible.

These conflicting requirements are usually met by the use of a large conical clutch of the form shown in Fig. 3, which illustrates the clutch used in the Clement car with the

speed change just described. In this drawing, A is the motor crank shaft, with the flywheel B attached; C is one-half of the internally squared coupling box also lettered C in Fig. 2; D is a short connecting shaft, whose forward (left) end is of square section and is bored out and bushed to receive the small end of the crank shaft. The rear end of D is also squared, but with the sides somewhat rounded to permit shaft D and the gear shaft to lose alignment somewhat without cramping. Movable on the squared end of D is the conical made portion E of the clutch, and aluminum casting faced with leather. The hub of E is prolonged in a sleeve, on which is secured the collar F, with a ball thrust collar loose on the sleeve just in front of it. Near the other end of D, just forward of the coupling box, is clamped a split ring G, and between this and the collar F is a stiff compression spring, which forces E against the flywheel. The reaction of the spring, acting on D, is transmitted through the round steel block H to the end of the gear shaft B (Fig. 2), and is finally taken up at Q (Fig. 2) by a ball thrust bearing inside the gear case. Another ball thrust bearing I (Fig. 3), takes up the spring pressure on the flywheel against the crank case of the motor.

To retract the cone E from contact with the flywheel, two arms J are provided, which, constituting a fork fulcrumed at K, press backward on the small ball thrust bearing L. A pedal M, under the operator's foot, acts on the arms J through the link N and lever arm O. Thus the clutch is normally held in engagement by the spring, and the operator, by a light pressure of his foot, releases it. P is a rod connected to the mechanism for applying the rear wheel brakes. It terminates in the slotted forging Q, in which works the arm R, also connected to the rock shaft K. Thus ap-

plying the brakes automatically releases the clutch, but the latter may be released by the pedal without applying the brakes, the pin in the end of R sliding freely in the slot in Q. The hand lever by which the wheel brakes are set runs over a notched sector in which it may be caught, so that the machine may be left standing, with the motor running, the clutch out, and the brakes set.

This system, known as the pedal control, will be more fully touched on in the article on Transmission Systems next week.

#### THE ELECTRICAL SITUATION

The following summary of the present situation of the electric vehicle in competition with gasoline and steam is from the *Electrical World and Engineer*:

The present season brings automobilism into a more conspicuous position than it has before occupied, but we regret to say that in general the electric machine is not taking the prominent place which it ought to have. The cause of this backwardness is not far to seek, although somewhat complex. In the first place, the dismal failure of public electric automobiles in several cities tended to give the motive power a black eye irrespective of its real merits. Secondly, so far as private automobiles are concerned, the lack of proper charging facilities outside of the larger cities and towns is discouraging to those who are fond of touring. Gasoline is available everywhere, and the supply can be promptly replenished, while charging a battery is always a slow job, and unless all the conveniences are at hand a troublesome one to boot. One does not wish to limit his country tour to lines of travel along which he can strike charging facilities every evening, and the oft-suggested program of sending charged batteries ahead to be taken on at the proper time is one which bespeaks very

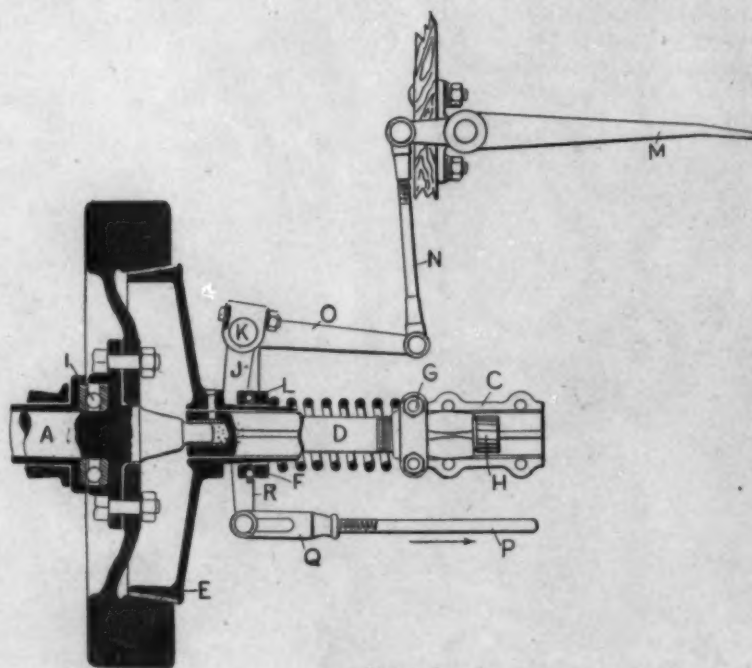
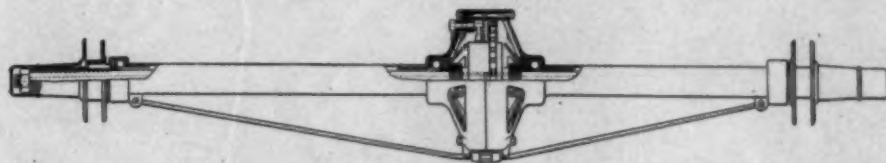


FIG. 3



limited knowledge of the difficulties involved in the task. For twenty years the distribution of charged batteries to the consumer has been a favorite resort of the

automobile business. On the contrary, it requires very careful and intelligent engineering to bring out a successful result. The electric carriages so far built have



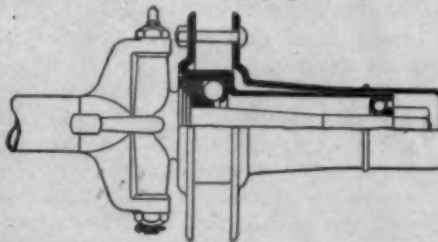
newspaper electricians, but except on a very trivial scale it has amounted to nothing whatever, nor will it in our opinion ever do so. It is not, as some credulous souls have thought, a question of the weight of the battery, within at least the limits of reasonable probability. It is not the fact of a battery weighing 100 or 200 pounds that makes the difference, but rather the nuisance of having it replaced at the proper time, be it heavy or light. And one in touring the country wants to have a certain liberty of action which a journey fully prearranged does not and cannot give.

In all cities of any size it may be safely assumed that facilities for charging batteries can be easily secured, and the more required the more will be established. The electric vehicle has at least one unique advantage, it can be stopped and started without any annoying preliminaries, and is far simpler to operate than any other known type of automobile. Once the batteries are fully charged, the subsequent operations become very simple indeed. The whole success of the machine turns on the good qualities of the battery. We are not disposed to think that extreme lightness in the battery is a prime necessity, although in itself it is a good thing. The endurance which implies reliability and a low rate of depreciation are the qualities most important. We believe that Mr. Edison attaches far more importance to the mechanical and chemical stability of his new battery than to its efficiency of light weight. In these latter particulars it is not widely different from the lightest lead batteries, ignoring the matter of depreciation. The time has come, we think, for the electric vehicle to be taken up seriously as a means of ordinary urban transportation of passengers and freight, and for a determined effort to forget the past failures in present successes. The earlier vehicles not only were in constant trouble with their batteries, but many of them had very bad motor drives. The gearing that can be heard five blocks away is not a sign of high efficiency, nor of battery endurance. On the whole, we are disposed to think that the present run on steam and gasoline vehicles may prove a good thing from the standpoint of the electrician. It throws a very disagreeable burden of sorrows on the other fellow, and it gives time for a careful, steady attack on the electrical problems involved. It is not a bell hanger's job, this electric

been good just in proportion to the designer's ability, and a moderate demand is better for judicious and effective work than a rush of business that encourages the production of makeshifts. The best of our builders have all the business they can comfortably handle even as it is, and they will not complain if the demand does not bring competitors.

#### PRESSED HUBS AND TUBULAR AXLES

Among the latest products in hubs and axles are the sheet steel hubs for front and rear wheels and the tubular steel rear axle and its attached parts shown in the accompanying drawings. The hubs are drawn from sheet steel by great hydraulic



pressure and combine light weight with great strength. The spoke line of the front hub is directly over the innermost ball race, which brings the center line of the spokes close to the steering head and results in smooth and easy steering. The ball races are ground in position to insure absolute accuracy and parallelism and the cones and cone seats on the spindles are ground to gauge. The hubs are machined right and left. The caps are drawn from heavy sheet brass and polished and lacquered. The rear driving hubs made to match the front hubs have the spoke flange as close as possible to the axle

bearings and are bored and reamed for 1 7-16-in. axle, with keyseat. These hubs are designed for 1-in. and 1 1/4-in. spokes and for motor vehicles having a maximum load of 1,000 lbs., and with a weight of 400 lbs. on the front axle. The yokes are furnished for 1 1-16-in. square, or 1 1/2-in. tubular front axles.

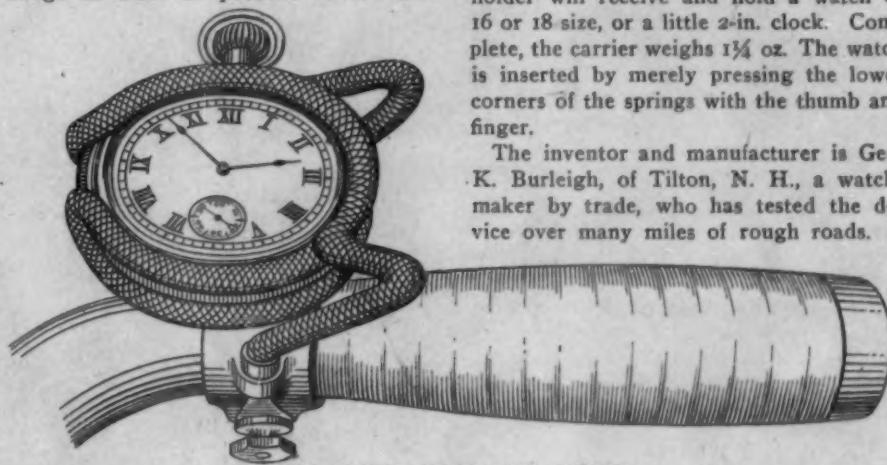
The rear axle is furnished complete except for compensating gear and brake. The live axle is machined from tubing and has an outside diameter of 1 7-16 in., with central bore of 1/2 in. The outer tubing is 2 5-16 in. diameter. The axle is keyseated for hubs and gears and all fits are ground to gauge. The races in the outer sleeves are ground in position. The gear cover, which is of pressed steel and of open truss pattern, is designed for No. 1, No. 2 or No. 3 Brown-Lipe compensating gear. The boss for the brake is drilled and faced. Spring seats may be clamped on the outer tubes or will be placed in position between the bearings by the manufacturers of the axle before brazing, if furnished, as no brazing should be done after delivery is made. These axles are designed to carry not to exceed 600 lbs.

Both the hubs and axles are the latest product of the American Ball Bearing Co., of Cleveland, O.

#### THE BURLEIGH WATCH CARRIER

The convenience of having a watch or stop watch in plain sight of the operator at all times, so that one hand will not have to be removed from steering wheel or controlling levers to withdraw the timepiece from the pocket, prompted the invention of the spring carrier here illustrated. The holder proper is made of fine spring wire, bent as shown to conform to the shape of the watch and covered with woven linen thread to protect the timepiece from jars and from being scratched. The convolutions of the wire are such as to hold the watch at an angle so as to prevent injury to jewels or pinions. The wire is attached to a metal clamp for attachment to the steering lever of any size from 1/2 to 2 in. diameter. The holder will receive and hold a watch of 16 or 18 size, or a little 2-in. clock. Complete, the carrier weighs 1 1/4 oz. The watch is inserted by merely pressing the lower corners of the springs with the thumb and finger.

The inventor and manufacturer is Geo. K. Burleigh, of Tilton, N. H., a watchmaker by trade, who has tested the device over many miles of rough roads.



THE BURLEIGH WATCH CARRIER



#### A PHYSICIAN'S EXPERIENCE

CINCINNATI, O.—Editor AUTOMOBILE AND MOTOR REVIEW:—If you ask whether or not I have found the use of the automobile practical for the work of a physician, I unhesitatingly answer, yes. Of course, one's success will depend largely on the machine he owns and the care he gives it. My experience in the use of an automobile covers a period of a little over three years, and while I know of some physicians who have used the motor car and then gone back to the hay motor, I could not be persuaded to give up my automobile for the best team of horses to be had.

My first experience was with a De Dion motorette, which I used with fairly satisfactory results for over a year. On account of the low h.p. of the motor and the many long and steep hills around Cincinnati, I would occasionally get stuck, and for this reason sold my gasoline vehicle and bought a steamer (Locomobile). With this machine I have never been stuck, nor have I ever had to be towed in. I have never scorched my boiler, and to-day, after having traveled with it over 6,000 miles, the engine is working finely. I have had occasionally to take out broken balls and replace wornout cones, but my chief trouble has been with the crosshead pump. I had three different pumps put on my machine before I could find one that would give me a good supply of water at all times, and I have only recently discovered why I have had so much trouble in this respect.

My last pump was quite a large one and I was sure it was capable of pumping water fast enough, but it failed to give me a liberal supply in the boiler. It occurred to me that possibly the trouble was with the piping between tank and boiler and I had it all removed. I found there was not a single check valve placed so as to seat itself properly. They were all inclined at an angle. By rearranging the piping so that it was perfectly horizontal, thus allowing the full force of gravity in seating the checks, I found I had no trouble in keeping a full supply of water in the boiler with the by-pass turned on only about half the time. I was surprised that I had not discovered this before. I had had the check valves examined a number of times by so-called competent mechanics, but they never could discover anything wrong with them.

A word as to the care of a motor car. I have my man carefully clean the engine.

chain and differential with waste every day. This he does during my office hours when the machine is not being used, and at the same time he carefully examines every nut and screw so that I know before starting out that everything is tight. I believe that with such care one can run a machine like mine almost indefinitely. Of course some parts will become worn out in time and will have to be replaced. There are very few days in the year that I do not travel from twenty to thirty miles in my machine. I make use of no auto-matics on my machine, as I believe that the greater safety is in one carefully watching himself the working of the different parts of the machinery. I find I do this unconsciously, as it were, without feeling the task at all irksome. L. S. C.

#### A REAL TEST OF ENDURANCE

NEW YORK.—Editor AUTOMOBILE AND MOTOR REVIEW:—Will you permit me to call attention to a certain phase of the so-called endurance contests? If the object of these contests, which have now been going on for a year or more, were to ascertain and publish for the benefit of automobile users actual facts as to the reliability, durability, speed and comfort of the various makes of machines, as we have a right to presume, then it appears to me that the trials have wholly failed. It is rather remarkable that through the whole range of automobile literature there appears no decided expression of opinion on the relative merits of any two autos. The published results of the endurance tests reveals nothing that can influence a would-be purchaser in the choice of a "wheel"—nothing, in fact, that tells for or against a machine's good or bad points. As far as the records of such tests go the cheap runabouts so common on our streets possess every advantage that can be claimed by even the highest priced and most efficiently engined Panhard.

What is the good of a test that places a 4-h.p. tip-up steam buggy in the same class with a mile-a-minute racer or a costly and luxurious touring wagon? Is there no man who dares to mention his preference? What sense is there in all this reticence? If a machine isn't right, if it has faults of construction, if the wheel base is too short for comfort, if the seats are not arranged properly, if it is too slow, if it eats too much gasoline, if it is always falling to pieces, if it is a disappointment to the user—why not say so frankly and compel Mr. Manufacturer to change his styles?

My idea of a trial test worthy of the name would be this: I would hire a race

track and set the contestants to work, making a six-day go-as-you-please of it, the vehicle making the most miles in that time to get the prize. No repairs but what the driver could effect with things that he takes along. Let them run twelve hours a day, as fast or slow as they please, officials keeping account of the miles, and the great question of "get there" would be solved. There should be the fewest possible restrictions about these races, so that any one can enter and no one can have any chance to claim that his non-success was owing to official meddling. This sort of race would cost less and be more amusing than any road contest, and the public might be charged for admission.

It is time that the question of comfort of vehicles was gone into. Some cars are dreadfully hard on the passengers, while others are the acme of ease and luxury. This matter deserves discussion.

F. I. B.

#### EXPERIENCES WITH STEAM CARS

GREENWICH, Conn.—Editor AUTOMOBILE AND MOTOR REVIEW.—I have had about sixteen months' experience with steam machines of four different types, first Locomobile, next White, then Stanley, and I am now licking a Mobile into shape. My experience has been that it takes time to get the best results out of any machine. I am now trying a new boiler in my first machine with not very satisfactory results so far.

W. H. McC.

#### FREQUENT ATTENTION SAVES DELAYS

LOWELL, Mass. Editor THE AUTOMOBILE AND MOTOR REVIEW:—Though I have owned and operated an automobile (Locomobile) over 3,000 miles, and all last summer was among the White Mountains and 30 miles from a repair shop, I have never had a delay of over fifteen minutes on the road. I believe in watching the various parts and testing often. I do not wait for a chain to break, but as soon as it stretches enough to ride the sprocket I put on a new one. I believe by this method the number of delays on the road can be reduced and the cost of operating will be no greater at the end of the year.

HORACE S. BACON.

#### LENOX FEELING COOLING DOWN

PITTSFIELD, Mass., Aug. 16.—Editor THE AUTOMOBILE AND MOTOR REVIEW:—It is hardly fair to state that the Aspinwall Hotel has prohibited automobiles, as they visit the hotel daily. There are two entrances to the hotel—one a very narrow driveway. This is reserved for horseback riding and for ladies and children. The main entrance at the Lenox end is open to autos and the manager assured me today that we were always welcome.

The feeling against automobilists in Lenox is cooling down, as the people see the owners of automobiles are more than willing to do the fair thing.

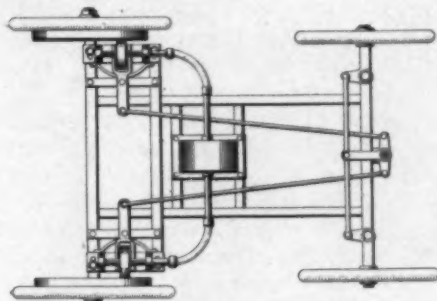
FRANK W. BRANDOW,  
Pres. Berkshire Automobile Club.



## The Week's Patents

### NOVELTY IN DIFFERENTIALS

Letters patent No. 707,340, dated August 19—Albert A. Medina, of East San Jose, Cal.—This invention may not have much commercial utility, but it is interesting as one of the most unique differential gears for automobiles that has yet appeared. The inventor utilizes friction drive to secure the compensating effect, but does not adapt it to vehicle speed control.



Medina's Friction Drive Differential

Each driving wheel is mounted independently upon a rigid axle and is provided on its inner side with a friction disk. A motor, whose kind is not mentioned, is supported centrally in the main frame of the vehicle and each end of its transverse shaft is fitted with a flexible shaft. These flexible shafts communicate with the shafts of two friction pulleys adapted to transmit the rotation to the rear wheel disks. They are held in contact by springs which tend to force outward the bearing blocks upon which the pulley shafts are mounted. The pulleys are slidable upon their shafts, being secured by splines and feathers.

The radial position of each pulley relative to its respective wheel disk is governed by a fork which is fulcrumed upon the frame and whose lever arm is connected by a link to a lever arm upon the steering post of the vehicle. It is thus assumed that when the operator turns the steering lever to divert the direction of travel the friction pulleys will be moved across the respective disks in opposite directions in a proportion of movement which will so correspond with the angle of vehicle turning as to alter the running speeds of the driving wheels in the correct proportion. If the inventor had but also made a vertical lever of the steering tiller so that both friction pulleys might be moved in unison as well as oppositely, he would have had an elastic speed control gear as well—and all for the same money.

### STEERING GEAR LOCK

Letters patent No. 707,464, dated August 19—Cornelius S. Van Wagoner, of Cleveland, O., assignor to M. L. Van Wagoner, of Brooklyn, N. Y.—The device embodies a friction clutch, one member of which is

rigidly secured to the front axle of the vehicle, while the other, or movable, member of the clutch, forms the medium through which the movement of the steering tiller is transmitted to the wheels.

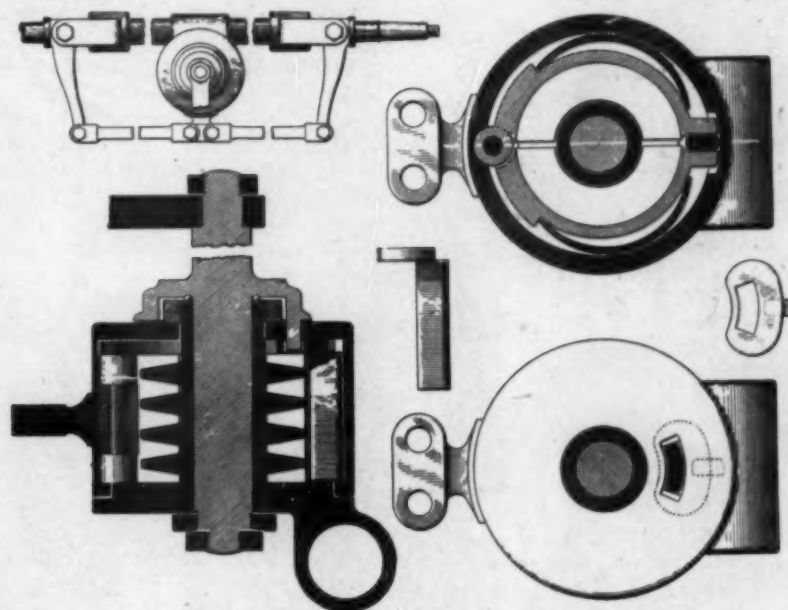
The fixed clutch member is made in the form of a hollow post which is integral with a bracket by which it is secured to the steering wheel axle. The hollow post is annularly grooved to form wedge-shaped ribs that enter corresponding grooves in the inside face of the movable member of the clutch, this engagement being provided to secure a more powerful clamping effect than were the frictional surfaces plain. The movable clutch member is a split cylinder with its two sections hinged together at one side, the knuckle of the hinge being recessed into the wall of a retaining case, which is thus adapted to rotate with the hinged members. The case has bearing at the bottom on the bracket of the fixed clutch member and is retained at the top by the passage of the fixed hollow post through its central aperture.

The free ends of the hinged clutch members are provided with parallel projections, or ears, between which is inserted a flat bar or rocking lever, which, when turned on its longitudinal axis, will force the hinged members apart and thus release them from frictional contact with the in-

close contact with the fixed clutch member by flat steel springs inserted between them and the wall of the retaining case. As the separating movement necessary to release the hinged members is slight, the springs may be sufficiently powerful to insure a positive locking action of the clutch members without preventing their ready separation.

On the outside of the retaining case are lugs to which are connected the usual links extending to the steering knuckle arms. Journaled in the hollow fixed post is a shaft, whose cap is provided with ball end thrust bearings. This cap covers the case retaining nuts on the upper end of the fixed post, and to it is attached the steering tiller. Depending from the cap is a finger which passes through a slot in the top of the retaining case and enters a slot in the projecting head of the rocking lever between the hinged clutch members. The slot in the rocking lever head engages the depending finger snugly, while the slot in the retaining case is slightly wider than the finger.

In the operation of the device, when the steering handle is turned in either direction, the initial movement of the shaft causes the depending finger to turn the rocking lever for separating the hinged clutch members. The finger then comes into contact with the end of the slot in the retaining case, and hence turns that case with the steering tiller shaft, the movement being further and directly transmitted to the steering wheels. The moment pressure is removed from the steering tiller the springs will force the hinged clutch members into their clamping engagement with



VAN WAGONER'S STEERING GEAR LOCK

closed fixed clutch member. The projecting ears are extended to set into a recess in the retaining case so that the movement of the two together, as provided by the recessing of the hinge, will be further insured. The hinged members are normally held in

the fixed post and thus hold the steering gear in the position to which it has been set until purposely released.

The device is simple, substantially dust proof, and need not be of expensive construction.

## OTHER PATENTS ISSUED AUGUST 19

Letters patent No. 707,378—Edouard Belledin-Gras and Frederick S. de Mondran, of Paris, France.—Elastic tire embodying flat springs.

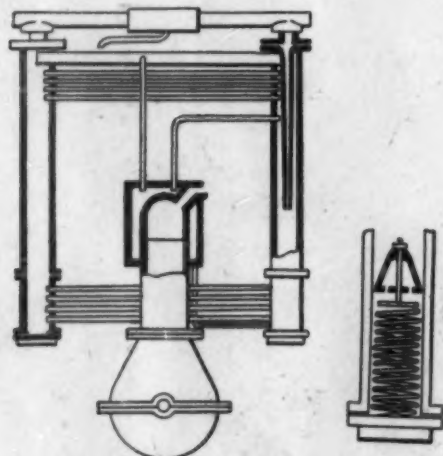
Letters patent No. 707,230—John C. Henry, of Denver, Col., deceased; Susie A. Henry, executrix, assignor to Stanley Electric Mfg. Co., a corporation of New Jersey.—Combination steam and electric automobile.

Letters patent No. 707,435—John G. MacPherson, of Philadelphia, Pa., assignor to the MacPherson Automobile Co., of Philadelphia, Pa.—Steering gear.

Reissued letters patent No. 12,021—Gustave Dahlberg, of McDonald, Jacob Clicquot, of Taylorstown, and Ernest Uhlin, of McDonald, Pa., assignors by direct and mesne assignments to the D. C. and U. Gas Engine Co., of Washington County, Pa.—Convertible steam and gas engine.

## WATER COOLING SYSTEM

Letters patent No. 707,570, dated August 26.—Ernest Estcourt, of South Hampstead, London, England.—This is a water circulating apparatus which is intended to obviate the pump commonly employed. In the main it comprises two upright reservoirs with cross tubes, all exposed to the air currents. The cross tubes are divided into two groups, one near the top of the reservoirs and the other at the bottom. One of the uprights is divided by a partition through which passes the lower end of a narrow funnel disposed within the upper compartment. The top of this funnel communicates with a cross tube above the system and whose other end is connected to the opposite upright. In the middle of the cross tube is a steam trap with a small escape



Estcourt's Water Circulator

pipe. From the bottom of the motor cylinder water jacket a pipe leads to the lower compartment of the divided upright, while from the top of the water jacket a pipe extends to the upper compartment. A third pipe leads from the top of the water jacket to a cross tube, one end of which is inclosed and the other end of which communicates with the upper compartment of the same upright.

It is supposed that the heated water in the motor water jacket will rise through the two pipes from its top and enter the upper compartment of the divided upright, from which it will flow through the upper series of cross tubes into the other upright. From this it flows to the lower compartment of the first upright and thence to the cylinder water jacket. Any steam formed is supposed to rise from the open upright into the uppermost cross tube where it will be partially condensed, the water flowing past the central steam trap and down through the funnel into the lower compartment of the divided upright.

The circulation is further assisted by a small conical plunger mounted loosely upon a spring near the bottom of the open upright. This plunger, which has a flat valve and is to be operated by the vibration of the machine. The whole device is intended for disposition at the front of the vehicle where it will receive free currents of air.

## STEERING WHEEL DRIVE

Letters patent No. 707,695, dated August 26.—Joseph H. Hoadley, of New York, N. Y.; assignor to the Pneumatic Carriage Co., of New York, N. Y.—The steering wheels are mounted on the usual stub axles, which are pivoted vertically in the ends of the fixed axle. The motor, which is shown as an electric motor, is mounted transversely upon the vehicle frame, the latter being hung on springs supported by the axle. On each end of the motor shaft is a bevel pinion meshing with a gear on the upper end of a vertical shaft. This shaft connects with the spindle upon which the steering knuckle is mounted through an extensible coupling comprising a vertically grooved collar engaging a series of corresponding flanges. A bevel gear on this shaft drives a gear on the wheel hub. The compensating gear is on the motor shaft. The patent object of the extensible couplings in the vertical transmission shafts is to compensate for the vertical play of the wheels. The device, like all such systems of transmission, has the disadvantage that the driving gears constantly tend to turn the steering wheels in their direction of rotation.

## OTHER PATENTS ISSUED AUGUST 26

Letters patent No. 707,793; Eddy T. McKaig, of Chicago, Ill.—Gasoline engine.

Letters patent No. 707,582; Walter I. Gregory, of Springfield, Mass.—Solid rubber tire.

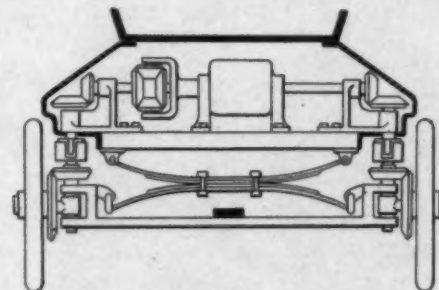
Letters patent No. 707,661; Moritz Weiss, of Vienna, Austria.—Double compartment pneumatic tire.

Letters patent No. 707,939; Charles H. Paschke, of Buffalo, N. Y.—Metal armor for pneumatic tires.

Reissued letters patent No. 12,024; Gustave Dahlberg, of McDonald, Jacob Clicquot, of Taylorstown, and Ernest Uhlin, of McDonald, Pa.; assignors by direct and mesne assignments to the D. C. and U. Gas Engine Co., of Washington County, Pa.—Convertible gas and steam engine.

## OLDSMOBILE AS A SUBMARINE BOAT

CINCINNATI, O., Aug. 30. (Special Correspondence.)—A rather unusual accident befell an Oldsmobile recently while en transit from Cincinnati to Huntington, W. Va. The machine was a new one, just purchased from the Hanauer Automobile Co. by a lumber merchant of Huntington, and had been ordered shipped by boat to the purchaser. When opposite Maysville, Ky.,



Hoadley's Steering Wheel Drive

a sudden lurch of the boat sent the machine, which was on the deck and not securely blocked, overboard into the deep water of the Ohio River. The packet company spent four days dredging the river in an effort to locate the machine, which they finally claim to have done two miles from where it went overboard. They have not, at the present writing, however, succeeded in bringing it to the surface.

On learning the fate of his newly-purchased machine, Mr. Hambreck telegraphed the Hanauer Automobile Co. to immediately ship him another and collect payment for same from the packet company. The packet company, however, refuse to permit this, claiming that they will be able to rescue the automobile from the river and deliver it to Mr. Hambreck. It remains to be seen as to just how serviceable the machine will be after a week's sojourn under the muddy waters of the Ohio.

## A CHEMICAL FIRE EXTINGUISHER

Experiments have been conducted for several months past with an especially designed fire extinguisher that could be carried conveniently on motor vehicles and that would be effective in extinguishing flames from gasoline. In a demonstration and test held last week in Waterbury, Conn., the new extinguisher proved effective in putting out 200 sq. ft. of gasoline flame in 5 seconds. The chemicals are put up in the form of a dry powder in tubes 22 in. long by 2 in. in diameter, which can be carried without inconvenience. It weighs only 2¾ lbs. The powder is sprinkled out of the opened end while holding the tube by the other end in the hand.

The extinguisher is called the Nevermyss Auto Extinguisher, and is made by the Nevermyss Fire Extinguisher Co., of Waterbury, Conn., which has been conducting the experiments. The tests have been so satisfactory that the company is now offering the extinguishers for sale as the most effective means of putting out flames in a motor vehicle.





### A GASOLINE EXPLOSION

Serious Mishap to the Launch Viking While Filling Her Fuel Tank—Sinking of the Yacht Through an Apparently Causeless Explosion

NEW LONDON, Conn., Aug. 25. (Special Correspondence.)—The 35-ft. twin-screw gasoline launch Viking, owned by D. J. Post, of Hartford, was sunk in the Connecticut River at Middletown last Monday through an explosion of gasoline, which rent the bow from keel to deck. The Viking was on her way to Hartford and put in at George M. Pratt's dock to fill her tank. With Mr. Post were E. B. Boardman and a friend. Mr. Boardman was in the stern when the explosion occurred and he was thrown heavily and severely shaken up. The boat sank in five minutes close to the dock, carrying with her much wearing apparel belonging to her owner and party and a large supply of provisions.

At the time of the accident the gasoline was being fed into the tank through a hose. The oil in the tank did not explode, and Mr. Post was at a loss to explain the accident, as no fire was in the immediate vicinity and none of the party was smoking.

Late in the evening the Viking was raised bow foremost and she was patched sufficiently to allow pumping out, when the boat was towed to Markham's marine ways at Portland for repairs. While the cause of the accident has not been definitely determined, it has been attributed to live wires. In the locker underneath the tank in the bow were stored a number of life preservers, which rested against the wires furnishing the current for the sparking device. The motion of the boat is thought to have shifted the life preservers, the friction wearing off the insulation and allowing the wires to come into contact, producing a spark. The damage to the Viking will necessitate the rebuilding of her stem for about five feet.

#### A New Motor Enterprise

The Sneckner Motor Co., a new enterprise at Stamford, Conn., has located its plant at Waterside, and work has been started on the new factory in which the Sneckner noiseless gasoline marine motors will be built. The machine shop will be 30 x 100 ft. The boat shop will be 30 ft. wide and extend to the water front to facilitate launching. A model room and office building 30 x 40 ft. and two stories in height will complete the buildings of the company. An up-to-date equipment will be installed, and the concern is confident that it will have a plant the peer

of any in New England. Designs of motor boats for business and pleasure are in progress, and the Sneckner company expects to be ready to handle anything in its line by January 1, 1903.

#### A Motor Launch for Spain

E. A. Ely, the Middletown boat builder, has finished a 22-ft. launch, which is to be equipped with a Rhode Island Motor Co. engine, and when completed the boat will be shipped to Spain, the gift of an American gentleman to a friend. Mr. Ely has also delivered to Town Clerk Howard, of Middletown, a 22-ft. launch, and has a 17-ft. launch well in hand, the latter for his own use.

#### Facilities for Charging Launches

Owing to a demand that has made itself felt at New London only this season, the local Gas and Electric Co. has established a charging station on the water front in the rear of its plant and is supplying current for electric launches. While there is but one electric launch making New London its home port, the summer residents have taken up this style of craft, and several yachts that frequent New London harbor have small electric launches.

### THE VIKING EXPLOSION

According to information from another source, the explosion on board the power launch Viking, mentioned by our New London correspondent, was due to the fact that the side lights, when taken in after running at night and stored in the bow compartment, were not extinguished. We are not informed as to the construction of the compartment and gasoline tank, but it is quite probable that the presence of the naphtha vapor which found its way to the lighted lamp was due to such a faulty arrangement as we described in THE AUTOMOBILE AND MOTOR REVIEW of July 5, by which the rich vapor in the empty tank is expelled in the filling and allowed to settle in the bottom of the boat about the bow compartment. Two things are essential to an explosion on a gasoline launch or motor car: In the first place there must be a supply of explosive vapor; in the second place fire must in some way be communicated to this vapor.

It is not always possible to guard against the presence of fire, but it is almost always possible to make certain, by proper construction of tanks and connections, and by eternal vigilance in the use of all gasoline vehicles, that at no time is there any vapor outside of the proper receptacles. In this case, whatever the source of the fire, it is evident that the prime cause of the trouble was the presence of explosive vapor where it need not and should not have been.

### HEMPSTEAD HARBOR YACHT CLUB

On August 27 the Hempstead Harbor Yacht Club, of Glen Cove, Long Island, held a series of launch races, the first ever given by a club of the Y. R. A., of Long Island Sound. The races were under the Rudder allowances, the launches being divided into three classes. The day was clear with smooth water and the conditions were favorable for the launches. The times were:

Red Class.—Six miles; start, 3h. 5m.

	First	Round.	Finish.	Elapsed
Rake Handle, A. D. Tappan	3:53:35	4:43:13	1:38:12	
Golden Rod, H. Van Cott	3:50:30	4:34:09	1:39:09	
Wee-Wee, E. T. Jackson	3:53:30	4:41:53	1:36:52	
Scout, August Belmont	3:53:33	4:42:45	1:37:45	
White Class.—Ten miles; start, 3h. 10m.				
Louise, J. D. Sayre	4:03:45	5:00:19	1:50:19	
Yvonne, G. N. Morin	4:10:51	5:16:37	2:05:37	
Memory, R. N. Bavler	3:59:00	4:48:11	1:38:11	
Valpa, W. M. Valentine	4:06:35	5:03:30	1:56:30	
Americus, A. P. Dunlap	4:03:30	4:56:01	1:46:01	
Scout, F. Van Cott	4:02:05	4:54:45	1:44:45	
El Capitan, H. Douden, Jr.	4:04:30	5:00:18	1:50:18	
Red Rover, R. F. Cocks	Did not start			
Blue Class.—Ten miles; start, 3h. 15m.				
Pawnee, F. A. Sneckner	4:09:27	5:03:53	1:48:53	
Ariel, W. F. Hicks	4:06:25	5:01:53	1:46:53	
Wriggle, G. S. Wilson	4:07:55	5:01:37	1:46:37	
Cabot, G. Steis	4:11:15	Withdraw		

The winners were Golden Rod, Memory and Wriggle. One of the crew of the Pawnee had his ankle badly bruised by the handle of the flywheel. The races were managed by Mr. Ward Dickson, of the race committee.

### LAUNCHES FOR THE SOUTH

NEW HAVEN, Conn., Aug. 26. (Special Correspondence.)—Charles Bernardotte and Michael Fitzgerald, of the Thimble Islands, are contemplating the making of a trip to Cuba the coming fall in the former's 30-ft. gasoline launch Rescue, which has a 10-h.p. motor. The trip will probably be made in October, arriving out early in November. The entire winter will be spent on the island of Cuba, and the boat will be sold there if a market is found for her. Mr. Bernardotte is the owner of the boat and is looking for something larger another season. The Rescue will go out by the inside passage, going back of Cape Hatteras. It is also expected here that Captain Adams, of this port, who went to Florida in a gasoline launch last winter, and sold her there, will take out his new and larger launch this season. It is expected that the market for the northern built gasoline launches will increase rapidly in the South, and that much of the northern output which is now in use here will ultimately be sold there, following the method of the absorption of northern bicycles by the South.

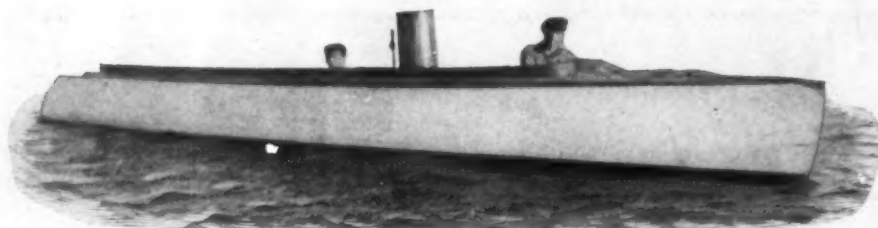
### LAUNCHES AT SYRACUSE

SYRACUSE, N. Y., Aug. 28.—The Lady Antoinette, a motor launch owned and manned by H. Keeler, of New York, was tied up in the canal Saturday, having arrived from Geneva. The boat is a peculiar one. She appears at a distance much the same as a large catboat, decked over for a cabin and without a mast. There is a large cockpit from which the boat is steered. She draws 2 ft. and is 30 ft. long.

Another launch which was tied in the canal was the *Firefly*, owned by John E. McIntosh, a well-known engine maker of Auburn, who is spending the summer at Cayuga. Mr. McIntosh makes frequent trips to this city.

#### A FAST STEAM LAUNCH

We are indebted to the builders, the Taunton Automobile Co., of Taunton, Mass., for the accompanying lines of a launch lately completed which has made a speed of 15 miles on her trial trip. The lines, which follow the general form of a torpedo boat, were drawn by E. B. Edwards, of the Boston Tow Boat Company, formerly with the Fore River Ship and Engine Co.



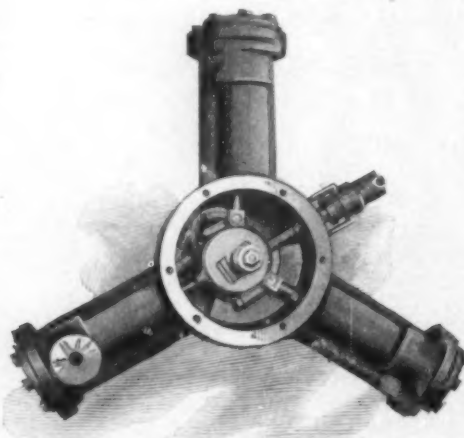
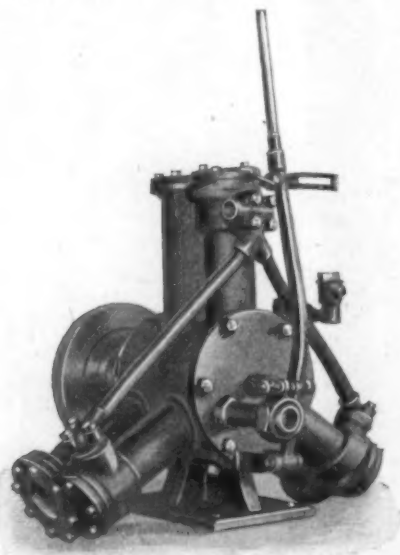
TAUNTON 25-FOOT STEAM LAUNCH

10 h.p. at 600 revolutions, the steam pressure being 150 lbs.

The boiler, also shown, is of the special type built by the company, using kerosene for fuel; a very high pressure is possible and this pressure is under complete control through the oil feed, which may be set at

launches as well as to furnish and install the outfit.

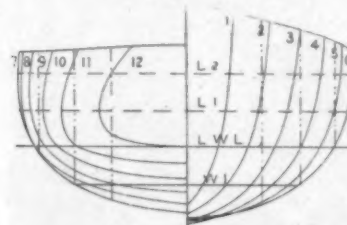
When a mariner prepared to set sail in ancient days he posted a notice in the market place to that effect. He invited his neighbors to come and guarantee that they would share his loss, in case he met with disaster on the voyage. To every man who wrote his name under this notice, fixing a sum which he would contribute toward making good the loss, if such there were, the mariner paid a percentage. "Writing under" such a notice is where the term "underwriting" originated. It is now applied to finance, and signifies that



THE TAUNTON THREE-CYLINDER ENGINE

Length		
over all	24 ft. 9 in.	
l.w.l	23	8
Breadth		
extreme	4	6
l.w.l	4	
Freeboard		
bow	2	
least	1	3
stern	1	2½
Draft		
to rabbet	1	
bottom of scag	1	8
Displacement	2,240 lbs.	

any point, after which its action in maintaining a constant pressure is automatic. The boiler, with its large superheating coil, has the advantages of both the flash and constant level types, the circulation is perfect, there is no priming, and it is claimed that it will evaporate more water for its weight than any other form. The propeller is of 24 in. diameter, three-bladed, with 30 in. pitch. The company has recently installed one of these plants in a 30-ft. sloop and it is preparing to build complete



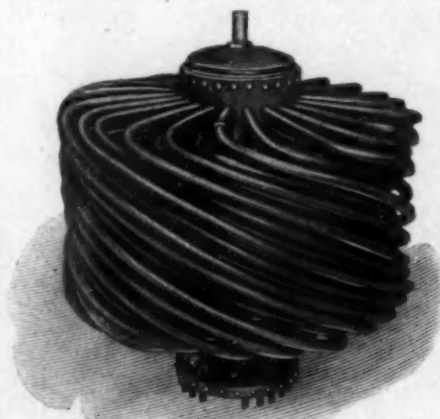
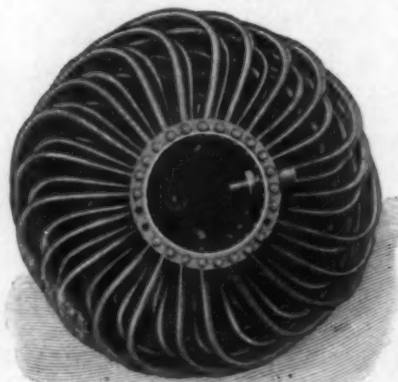
the "underwriter" subscribes to all the unsold stock of a corporation.—*American Shipbuilder*.

Alvina, steam yacht, Clement A. Griscom, arrived at New York on August 14 after a voyage of 12 days from Southampton. Since leaving New York 2 months ago she has cruised in British and German waters, being present at the Kiel regattas, Mr. Griscom and his family being on board.

The Moore Boat Works of Wayzata, on Lake Minnetonka, Minn., have just turned out a half cabin launch with torpedo stern, 38 ft. long, 7 ft. 6 in. breadth, for E. J. Phelps, of Minneapolis.

It will be noticed that the deepest part of the hull is well forward, between stations 4 and 5, while the widest part of the waterline is well aft; the result is that the entrance measured on the load water line is over 60 per cent. of the whole length; while the run as measured on the buttock lines is quite 60 per cent.

The power is one of the Taunton three-cylinder engines, shown in the cuts, with cylinders spaced 120 degrees apart; there being but one crank and one eccentric, with no slides, crossheads nor stuffing-boxes. The engine, which is completely enclosed, being lubricated by means of a single lubricator attached to the main steam pipe, develops



THE TAUNTON WATER TUBE BOILER



## A RACE AT BRIDGEPORT

Bridgeport yachtsmen have not yet ceased talking of the launch Mephisto from Norwalk, which ran away from the local boats in a 5-mile race and finished about a mile and a quarter ahead of her nearest rival. The Mephisto is practically a canoe with a small gasoline engine, but she can do about 8 miles an hour when pushed. There were four entries in the contest—the Mephisto, of the Norwalk Yacht Club; the Laurel, owned by I. W. Reed, of the Bridgeport Yacht Club; the Topaz, Commodore T. H. Macdonald's boat, and the Idunno, of the Park City Yacht Club. The course was  $2\frac{1}{2}$  miles, sailed twice around, the starting and finishing points being in front of the Bridgeport Yacht Club house.

The Mephisto got away about a minute after her rivals, but soon overtook them and on the first round had gained nearly half a mile. At the end she had crossed the line more than a mile to the good, covering the 5 miles with three turns in 41:15. The Topaz finished second, the Laurel third and the Idunno fourth.

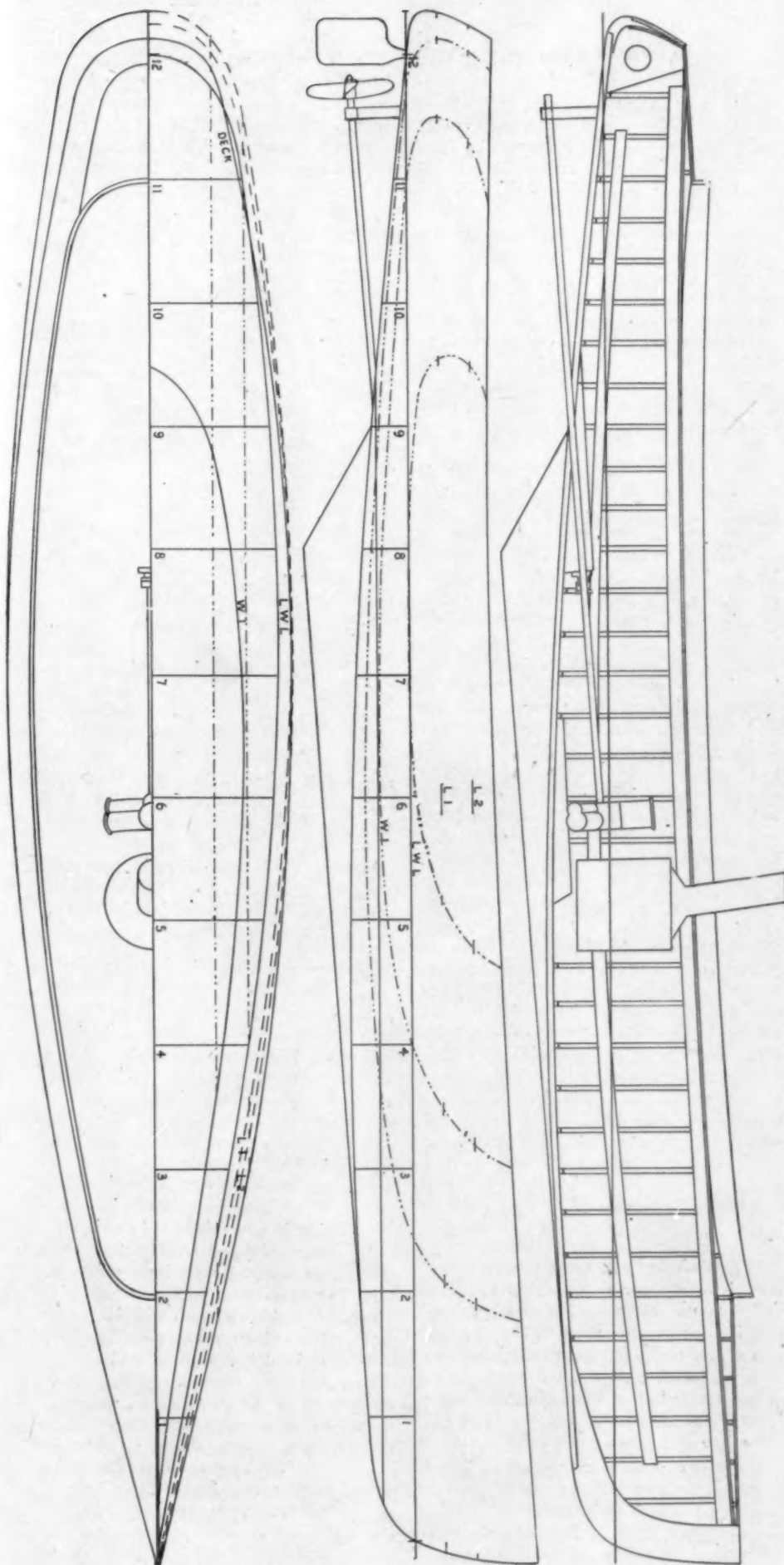
## A NEW KEROSENE LAUNCH

On Saturday the International Power Vehicle Co., of Waterside, shipped to Bombay, India, a 21-ft. launch equipped with one of its kerosene engines. The launch is for a British official and will be the only craft of its kind in Bombay, perhaps in India. It was forwarded by steamer by way of Genoa and the Suez Canal.

At the offices of the International company it is stated that the factory is hard pushed to supply the demand for engines. The working force has been increased from eight men to sixty within a year. The firm has every confidence in its engine and expects to find its market in India, Southern China, the Philippine Islands and other equatorial countries, because of the high price of gasoline and the restrictions placed on its use in those countries. Engines are now being made ready for Bombay, Calcutta, Rangoon, Singapore, Penang, Manila, Hong Kong, Shanghai, Tien-Tsin, and other cities.

## CHARGING FROM TROLLEY WIRES

Warren E. Smith, of Sheffield-on-the-Sound, the owner of a large electric launch, has taught the trolley road people the possibility of furnishing power for electric craft which may be developed as a source of profit. Mr. Smith arrived at Norwalk on Saturday and the batteries in his boat needed charging. He ran his boat to the South Norwalk drawbridge, where, by special arrangement with the street railway company, a connection with its feed wires was made and a switch placed on a pile. The boat was recharged during the night and Sunday morning Mr. Smith was ready for at least a 40-mile cruise. It is probably the first time that an electric launch has had her batteries recharged from trolley feed wires.





VOL. VII

NO 1

*Issued every Saturday by  
The Class Journal Co.*

MAIN OFFICE, 295 E'way, NEW YORK CITY  
Telephone 2406 Franklin

Western Office - 356 Dearborn Street, Chicago

## OFFICERS

H. M. SWETLAND, President and Gen'l Manager  
EMIL GROSSMAN, - - - - Vice-President  
F. L. SWETLAND, - - - - Treasurer

TERMS—\$2.00 per year, 10 cents per copy; foreign, \$3.00 per year, postage paid.

Do not send currency by ordinary mail in payment of subscriptions. Remit by Check, P. O. or Express Money Order, or register your letter.

## EDITORS

W. P. STEPHENS, - - - - New York  
HERBERT L. TOWLE, - - - - New York  
H. W. PERRY, - - - - New York  
E. RALPH ESTEP, - - - - Chicago

News copy should reach us Monday; telegraphic matter up to Wednesday noon.

Copy for advertising should reach us Saturday, but will be inserted if in hand Monday.

Copyrighted 1902. All Rights Reserved.

Entered June 16, 1902, as second-class matter, Post Office at New York, N. Y.

SATURDAY, SEPTEMBER 6, 1902

## THE NOVICE AT THE WHEEL

The fatal disaster at Elberon last week carries a lesson which, though involved in the Fair disaster, which immediately preceded it, was not so plainly apparent. In the latter case a dangerously high speed was one of the two if not the main contributory cause; all the evidence pointing to a speed which not only invited a failure of tires or other parts of the machine, but made all the odds favorable to a fatal termination in the case of such an accident as could hardly prove serious to a capable driver at a speed of thirty to forty miles.

In the Elberon case the question of speed may be disregarded as of little or no importance; accounts differ as to the exact rate, but it is quite evident that the speed alone was but a secondary factor. The one main cause was the ignorance and inexperience of the owner of the wrecked car, who was at the time driving. He was not only unacquainted with the heavy and powerful machine itself, having owned it only a short time, but he had no such intimate knowledge of motor vehicles and no such thorough experience as alone will justify a man in placing his chauffeur in the rear seat and assuming the entire control himself. As far as can be learned, he had owned various cars for some months past and had done a certain amount of running, but not enough to make him more than a novice.

The fact cannot be too plainly stated that no man should be allowed to run a motor

car on the public roads—except under the care of an expert guide and instructor—until he has attained such familiarity with the work as to act first and think afterward. Infinitely more dangerous than mere excessive speeding is the running of cars, even at fairly moderate speeds, by men who have barely memorized the various levers and pedals from an instruction book, and who have done a little driving alone without serious accident. In the case of a locomotive moving on a fixed track, with many safeguards against collision, months or even years of actual experience and work are considered necessary before a man is qualified as an engineer. In the case of a motor vehicle, any man, without regard to his experience or other qualifications, is now at liberty to take the fastest and most powerful machine over the public roads.

One of the most mischievous statements which we have yet seen on this subject is that credited to a New York motorist, himself an expert driver, in a recent interview by a daily paper in connection with the Elberon disaster. Arguing for the proper instruction of drivers as well as for their examination and licensing, this expert says: "Five or six lessons, of two hours each, ought to make any one proficient in the handling of automobiles." We venture to say that in the case of the average man this amount of instruction is just about enough to make him dangerous to himself, his fellow passengers and the public. While enough to give him unlimited confidence in his skill, and perhaps to make him fairly well acquainted with the momentum, braking power and other qualities of one car, it is not enough to qualify him for the handling of various cars or to meet any emergency.

As long as the road is good, the car runs properly, the speed is not too high and other vehicles and pedestrians do their parts, this novice is deluded into considering himself a Fournier or a Vanderbilt. It needs, however, only a petty emergency or something a little out of the common to rob him of all this veneer of knowledge, he is momentarily at a loss how to meet some novel situation, he stops to think what to do and thus loses for the moment his carefully memorized control of levers and brakes—and before he realizes the danger it is too late.

The only thing which can qualify a man for driving at other than the slowest speeds and with the most extreme care and caution is such experience as will enable him to act first and think afterward; the handling of wheel, brakes and levers must be second nature to him, to be done instinctively and instantaneously, and not after deliberation.

That this experience cannot be had in five or six lessons is a certainty; how it is to be acquired, or how long it may take, is a difficult thing to say, but until it is acquired the interests of the public require that the man

shall not be allowed to endanger other lives than his own.

It is probable that this accident will hasten the movement for the general licensing of drivers throughout the country, of course, after an examination; as similar though less serious mishaps, due clearly to the inexperience and lack of proper mental training on the part of the driver, are reported every day. While this examination and licensing will not prevent all danger, they offer the best and most practicable safeguard.

## THE RACING OF ROAD CARS

While there is a certain amount of opposition to all forms of motor car racing, we believe that the great majority of American motorists, including the makers, are in favor of a continuance of the sport on the road as well as on the track. If we may assume that racing is to continue, the next question is as to the cars which shall be permitted to race. Heretofore there has been no attempt to place a limit; anything on two, three or four wheels, however freakish, dangerous and useless, being freely admitted to the courses.

If racing is to be encouraged and developed for the good that is in it rather than for the mere idle sport, some action—prompt, vigorous and definite—is most necessary to place a permanent bar between the freak and the practicable road machine. It is too much to expect that any legislation will make the ideal road car a winner against cars specially built for racing, but at the same time a great deal may be done by such proper restrictions as will make all racing cars comply with the general requirements of the road, and will bar all machines built in defiance of such requirements.

In the first place, it is necessary that a speed record should have an absolute technical meaning, which it now has not. If a car establishes a record it should mean that in a certain class this car has carried so much weight at such a speed by means of a certain horse power. A record of this kind is worth the efforts of every maker, and races fairly conducted on this basis may be of material value to him in improving and advertising his work, as well as to the sport at large.

As racing is now conducted the honors, which when published broadcast as news, amount to a good deal from an advertising standpoint, go to the machines which cover the course in the least time without regard to other considerations, such as weight, horse power and serviceability.

The American manufacturers are to a man engaged in the construction of practical vehicles, for pleasure or business, and not of racing machines. They have in the racing which promises to become more popular each year an instrument which will be used either to their advan-



tage or disadvantage. If they so desire they can secure the immediate adoption of such a classification and racing rules as will open the courses only to legitimate road cars, and will make the result of every race the best possible advertisement for the maker of the winning car. Now is the time for such action, before another race is run or another freak built. If nothing is done, the every-day cars will be driven from the track by the racing machines, and where they do venture to appear they will only sacrifice themselves to make greater honor for the freaks.

What the daily papers have recently christened the "speed madness" is the great danger of motoring to-day; not merely on the road, but on the course. The craze for time records, regardless of weight and power, must constitute as great a danger to the motor car industry as the craze for road speed is to the traveling public. To be other than harmful, all racing must be on a technical and scientific basis.

The reports of the Long Island races, not only in the local papers, but in our exchanges from many distant points, show plainly the unfair distribution of honors. In nearly every paper the one prominent feature of the meet is the performance of a steam car which is described as a masterpiece of ingenuity in design and construction. The young amateur who built and who drives this vehicle is entitled to much credit for his unquestioned daring, but when it comes to invention, or to the practical value of his work, the less said the better. To sum it up plainly and truthfully, the machine is a racing freak of the most useless kind, and at the same time it is in no sense an invention. The builder has purchased wheels and running-gear suitable for a light road car and a boiler and engine fitted for a steam dray, assembling them and adding a big stack of grotesque proportions and two small seats, one forward and one aft. Using gasoline as fuel under a dangerously heavy pressure, this machine broke several records, but proved absolutely nothing that can be of service in improving the steam car. Its great power did no useful work in carrying weight, but was called on only to propel the two drivers—as the control was divided—and the light frame and wheels.

If there is any useful place in the economy of motor manufacturing for such machines as this and the Baker torpedo—and it yet remains to be proven that there is—such a place is not on the road or track in competition either direct or indirect with bona fide road cars, but on private tracks maintained by makers for experimental work. The publication of records made by these machines inevitably establishes false standards beside which the really meritorious performances of honest vehicles seem only discreditable.



#### CLEVELAND INDUSTRY EXPANDING

Three Motor Vehicle Concerns Preparing to Enlarge Capital and Facilities—New Vehicles and Improved Boiler and Battery

CLEVELAND, O., Sept. 1. (Special Correspondence.)—Cleveland's reputation of being already the center of the motor vehicle industry of the country will receive another boost as the result of steps being taken to increase their facilities by three local concerns.

The Hansen Automobile Co. is, in the near future, to be succeeded by a new corporation capitalized at \$125,000, and to be known as the General Automobile & Mfg. Co. R. Hansen will be president, J. C. Sanders vice-president, and E. H. Pomeroy secretary-treasurer. The company will move from its present location in the old Brush factory to a plant located on Hamilton St., near Marquette, which it has just acquired. The factory was formerly occupied by a prominent stamping concern and is 160x120 ft. and one story high. It is equipped with engine, boiler and shafting and is ready for immediate occupation, so the change will be made as soon as possible. Considerable new machinery will be purchased and the capacity will be brought up to six or seven vehicles a week.

The Hansen runabout, which has been illustrated and described in these columns, will be improved by increasing its power from 6 to 8 h.p. A double-cylinder engine will be used, and other improvements will be made but in general appearance the machine will remain the same. A new tonneau touring car will soon be introduced which will be equipped with a 12-h.p. double-cylinder vertical engine fitted with sliding gear transmission.

#### Enter the Amstutz-Osborn Co.

The Amstutz-Osborn Co., which has heretofore been classed as an experimenter, since its chief business lies in the developing of inventions for others, some time ago undertook the development of certain ideas in the construction of motor vehicles with such success that it recently decided to go into the manufacture of them. Plans have been drawn for a new factory on Case Ave., near the C. & P. tracks, and the company hopes to be in its new home within sixty days. The new car is of the gasoline type of the runabout class, fitted with French hood. It is known as the "Durable." A sample has been completed and work is being pushed on several more machines which will be completed in the near future.

Recently the company has undertaken the developing of a steam generator designed

to operate on the principle used in the Davey miner's safety lamp, which is that flame or heated gases cannot be made to come into intimate contact with cold surfaces without instantly losing their heat. This principle is used by the employment of one or more coils of pipe of spiral construction, so wound upon themselves as to leave only very narrow spaces between the walls of the pipes, these pipes being kept at a comparatively low temperature by the circulation of steam and water within them, and there being no other escape for the heated gases than through these narrow spaces, the heat is entirely and instantly given up to the water, thereby doing away with the necessity for a large amount of heating surface. At the same time the circulation of the water in the coils is so rapid as to prevent the formation of deposit and to keep the coils from becoming overheated so long as the supply of feed water is maintained.

The Amstutz-Osborn Co. is incorporated with \$100,000 capital stock.

#### American Motor Carriage Co. an Expansionist

The American Motor Carriage Co., which for some months has been building vehicles in a small but well equipped factory on East Prospect St., is also in the list of expansionists, and will shortly increase its capital stock to \$500,000, and is now making overtures for a site on which it is proposed to erect a factory of considerable size. The company is completing the first of a lot of its gasoline vehicles and is at work on a new pattern of electric machine. A new battery, which it has been developing during the past few months, was given a practical test last week and it is claimed that it showed fully 30 per cent. higher efficiency for the same weight than other batteries now on the market. It is the intention of the company to manufacture batteries for the trade as well as to build electric vehicles equipped with them.

#### Convertible General Utility Vehicle

The Hoffman Automobile & Mfg. Co. will shortly announce what will be known as the Hoffman general utility car. It is of the single-cylinder gasoline type, having body 7 ft. 6 in. long and wheel-base 5 ft. 6 in. It can be used for a two-passenger or four-passenger car or for a delivery wagon, the tonneau seat being detachable and in its place can be secured a top for delivery purposes or if desired a box may be attached for wearing apparel while touring. This will sell for \$850.

#### Eastman Body Co. May Move

The Eastman Metallic Body Co. is considering proposals from two or three towns

in this state with a view to increasing the capital and erecting a large factory. It has recently been offered several large orders for bodies, which it has had to decline because of lack of facilities to produce the goods within the time required by the customer.

### RAN 118 MILES ON ONE CHARGE

**A. C. Newby Makes a Record Run With an Electric Runabout on Asphalt Streets of Indianapolis and Starts a Discussion**

INDIANAPOLIS, Ind., Aug. 30. (Special Correspondence.)—Officers and promoters of the National Electric Vehicle Co. assert that their 1902 runabout has established a record by running 118 miles on one charge of the batteries. Sidney W. Elston, state agent for the Waverley, and other men connected with the Waverley department of the International Motor Car Co., in Indianapolis, dispute the statement that this is a record, but the principal automobile men of this city, who are not interested in either make of machine, agree that the performance is without a precedent.

The principal feature of the test is that the machine used was not one built for long distance. It was merely one of the many Nationals that are being turned out daily from the factory in Indianapolis. The records that have heretofore been made have been in especially constructed machines that could not be utilized for ordinary riding. An ordinary 44-cell battery, made by the Western Storage Battery Co., of Indianapolis, was used.

#### Test Made on Asphalt Streets

The attention of A. C. Newby, who made the record, was first called to the machine's powers of endurance immediately after it had been taken from the factory. It made eighty-two miles without trouble, and then he took a trip to Columbus, Ind., and several cities in that part of Indiana, making 215 miles on four charges. Then he made a trip to Richmond and return, seventy miles, on one charge. These trials decided him to determine exactly the machine's long-distance capacity on the asphalt streets of Indianapolis. He began early Thursday evening and continued until the small hours of Friday. Becoming drowsy, he put the carriage away, but began again the next day without recharging. When the battery refused to run longer the cyclometer registered 118 miles.

#### Causes a Lively Discussion

Sidney W. Elston, of the Waverley, says that any high-grade electric automobile will cover 118 miles, but that exhausting the battery in this manner daily would terminate its life in fifteen or twenty days. What inventors have been striving to perfect is a battery that will drive a vehicle long distances without wearing out, he says.

Mr. Newby contends to the contrary, and thinks the run demonstrates that electric machines are suitable for road use.

Frank M. Moore, of the C. G. Fisher Co., seems to voice the opinion of most Indianapolis motorists, when he says: "Mr. Newby is undoubtedly right. While it is true that the battery could not be run until entirely exhausted very many times without wearing it out, this test demonstrates that runs of 100 miles can be made on one charge. Then the battery would not be entirely exhausted, and the wear and tear would not be great. With runs of that length I think it should last as long as the average battery has lasted heretofore, a year or so."

### RECEIVER FOR AMERICAN BICYCLE CO.

**The Stockholding Company Defaults in Interest on Debenture Bonds and Will Be Reorganized—Temporary Receiver Is Asked For**

Proceedings for the appointment of a temporary receiver for the American Bicycle Co. have been instituted in the interest of the stock and bond holders. Although this course had been contemplated for some time, the final steps were not taken until after the company defaulted in the payment of the semi-annual interest on its 5 per cent. sinking fund gold debenture bonds, which fell due on Tuesday of this week. President R. L. Coleman, of the American Bicycle Co., issued an announcement on Tuesday afternoon in part as follows:

Proceedings have been instituted looking to the appointment of a temporary receiver or receivers in the interest of the bond and stock holders, and a plan of reorganization will be submitted at an early date for their approval.

The moving reason for this course is that the company is, and has been since its organization, hampered by lack of working capital and it is confidently expected that the proposed reorganization will furnish the necessary funds for the proper conduct of its business.

The company is perfectly solvent and undoubtedly has an assured future. It controls about 70 per cent. of the bicycle output, an increasing and profitable automobile business (in electric, gasoline and steam vehicles), and a growing and promising trade in storage batteries, for all of which it is exceptionally well equipped.

The American Bicycle Co. is now a holding company of the stocks of the American Cycle Mfg. Co., International Motor Car Co., Federal Mfg. Co. and National Battery Co. and others.

None of these four subsidiary companies will be affected by the fact that the parent company has been placed in the hands of a receiver. All are in good condition, and what assistance they need will be rendered by the receivers of the American Bicycle Co. or the bondholders in interest.

Although it is not known who is to be the receiver, it is believed that President Coleman will be appointed.

The American Bicycle Co. was organized in 1899 to acquire and operate the works of forty-four of the principal manufacturers of bicycles and bicycle parts in the United States. In November, 1899, the company sold its tire manufacturing plants to the Rubber Goods Manufacturing Co.

The common stock was originally \$20,000,000, and the preferred \$10,000,000, but in October, 1901, this was reduced to \$17,701,500 common and \$9,294,000 preferred. The preferred stock bears 7 per cent. cumulative dividends. The amount of debenture bonds is \$9,500,000.

### AUTOMOBILES AT YORK STATE FAIR

SYRACUSE, N. Y., Sept. 1. (Special Correspondence.)—All the Syracuse automobile manufacturers will have exhibits at the New York State Fair from September 8 to 13. The Century company will show five vehicles in charge of Frederick H. Elliott. The Stearns Steam Carriage Co. will show five in charge of A. W. Perry, who has recently become sales manager for the company. Perry was formerly manager of the Syracuse Automobile Co. The Syracuse Automobile Co. will display six carriages, made by the Olds, Locomobile and Waverley companies. They will be in charge of M. C. Blackwell. The exhibiting firms will not be allowed to sell any vehicles on the floor, but may take orders. The exhibition is not confined to Syracuse manufacturers, but is open to all. The Syracuse Automobile Club is arranging an automobile parade for some night during the week of the fair. It was at first intended to have automobile races at the mile track, but it was impossible to secure the entries that were wanted.

The contract has been awarded for the erection of the new plant for the H. H. Franklin Mfg. Co., which will be used for the manufacture of motor vehicles. The contract price is in the neighborhood of \$40,000. The plans call for a five-story building, 53 x 110 ft., two boiler houses, 30 x 50 ft., and a brick smokestack 150 ft. high. The buildings are to be finished by December 15, when the company will begin the manufacture of motor vehicles and employ between fifty and sixty men.

### GASOLINE PRICES CLIMBING

PHILADELPHIA, Sept. 1. (Special Correspondence.)—Motor vehicles and gasoline stoves are said to be responsible for the advance of 2 cents per gallon in the price of gasoline, which went into effect here last week. As the supply is said to be very short, another advance of 2 cents is not an impossibility within the next fortnight. Ninety-degree gasoline, which a year ago could be bought for about 17 cents, and a month ago for 19 cents, now costs 21 cents a gallon; the price of 86 and 88 degree gasoline has been proportionately advanced.

This increase is not lightly considered by the local motorists, despite the fact that the majority of them are comparatively wealthy men, and there is some talk among the club element of asking the National Association of Automobile Manufacturers to look into the causes of the advance.

### EXPORTS FROM NEW YORK

The exports of motor vehicles and parts of same from the port of New York for the week ended August 30 were as follows: London, 12 pkgs. motor vehicles and parts, \$6,568; Southampton, 1 pkg. 1 motor vehicle, \$4,500.

C. A. Benjamin has left Syracuse to take charge of the Chicago branch of the Locomobile Co. of America.



## PHYSICIANS LARGE BUYERS

WASHINGTON, D. C., Aug. 30 (Special Correspondence).—"As a result of the magnificent roads and streets of the city and surrounding country, Washington is fast becoming one of the most important automobile cities in the country," said a prominent dealer recently. "At the present time there are close onto 400 machines in use here, and there has not been a week this year that the local dealers have not sold a number of machines."

To gain some idea of the extensive use of the motor vehicle here among the best class of people, one need only to look over the membership list of the National Capital Automobile Club. Taking the people by classes, physicians have, from the very first introduction of the automobile in Washington, proven the best customers of the dealers. It is not too much to say that nearly every physician of standing in the Capital City has an automobile, and they are proving to their brethren who still cling to the horse and buggy that the new form of conveyance is very much cheaper and more satisfactory.

## THE KENSINGTON CAR

The new Kensington car, made by the Kensington Automobile Mfg. Co., of Buffalo, N. Y., made its advent in New York last week; running from Buffalo over some very bad roads. The party of four who made the trip were Messrs. W. J. Knowles, president of the company; H. D. Baird, engineer of the company; E. H. Frederick and F. D. Thorn. The car came through safely, but reported the roads through the center of the state as unfit for any traveling. It is a handsome tonneau, with the Kelecom motor, of 12 h.p., placed forward under the usual hood. We hope to give a more complete description later on. The car may be seen at 126 West Thirty-eighth St.

## THE FREDONIA GASOLINE VEHICLE

The Fredonia Manufacturing Co., of Youngstown, O., after experimenting for many months, is now prepared to market a new gasoline vehicle called the Fredonia. It is equipped with single cylinder,  $5\frac{1}{2} \times 6\frac{1}{2}$  in. hydro-carbon motor, and is of light and neat design. The wheels are 32-in. wood, equipped with 3-in. Goodrich detachable tires. The running gear is of 3-in. channel steel and rests on four elliptic springs  $13\frac{1}{2} \times 30$  in. The front axle is  $1\frac{1}{4}$  and the rear axle  $1\frac{1}{2}$  in. Roller bearings are used throughout. The company is negotiating with agents in Pittsburgh, Chicago and other cities to handle the vehicle, and with ample facilities it will soon be in a position to take care of all orders. Charles T. Gaither and F. G. Thomas are the mechanical heads of the company.

The Beardsley and Hubbs Mfg. Co., of Shelby, O., is turning out an auto-coach that is expected to make an impression.

## FOREIGN TOPICS

## THE KILOMETER RECORD

The Welbeck Course and Jarrott's Record Compared With Vanderbilt's Time in France—Lack of Good Speeding Courses in England

LONDON, Aug. 23.—The daily papers here, particularly those which have no knowledge of the subject of motoring, are writing quite a lot of nonsense with regard to a flying kilometer made by Mr. C. Jarrott on the course at the late trials at Welbeck Park. Mr. Jarrott drove the 70-h.p. Panhard on which he won the Circuit des Ardennes, and made three trips, doing  $31\frac{1}{2}$ ,  $29\frac{1}{2}$ ,  $29\frac{1}{2}$ , and finally  $28\frac{1}{2}$ , equal to a speed of 79.27 miles. This cuts Mr. Vanderbilt's time by  $1\frac{1}{2}$  seconds, certainly, but it is egregiously unfair to compare the two performances for a single moment. The course over which the American millionaire put up his  $29\frac{1}{2}$  on his flying Mors was level, while that at Welbeck not only possesses a falling gradient start of 800 yards, but the last third of the kilometer falls at a very sharp gradient, quite equal to 1 in 20, if not less. Therefore, no sort of comparison can be set up between this run of Mr. Jarrott's and your Parisian-domiciled millionaire. It is a thousand pities that we have no fair sprint course in this country, as the publication of flying kilometer times such as the above, although quite understood in this country, is likely to provoke the inference among our French neighbors that we are not exactly playing the game.

It is difficult to find a really suitable flying kilometer course, to say nothing of a flying mile course in this country on private property, as the landscape gardeners of the past when laying out park roads gave too much thought to the picturesque, having no inkling of what the then very much unsuspected chauffeurs of the future would particularly desire. The difference in this makeshift speed course at Welbeck in running from either end may be described in the fact that at the late speed trials Mr. Jarrott himself, still on the 70-h.p. Panhard, did 35 seconds for the kilo. down the course and  $42\frac{1}{2}$  up, a difference of  $7\frac{1}{2}$  seconds. This supports my contention that the Welbeck course is not just the one that flying records should be made over, unless trips are made in both directions and the mean time taken. But that would not read quite so well.

## The British Tire Trials

I fear that the tire trials which will run concomitantly with the big Reliability Trials in the first week in September, will not prove much if certain entrants drive as I

hear is their intention. In the face of the legal position it is impossible for the club to insist upon the cars being run at a speed of over twelve miles per hour, which it will be admitted is no sort of trial whatever. Consider, for instance, the absurdity of driving a car weighing say 1,500 lbs. on  $30 \times 3\frac{1}{2}$  Goodyear tires for 1,000 miles. Why, bar accidents, the test would hardly scratch them. Nevertheless this is the position, and one that is likely to prove a particularly embarrassing one for the judges, unless they have secret plenary powers, and cannot be called upon to give any sort of reason for the awards they may think fit to make.

## British and French Steels

The Napier people, who are really most enterprising and never lose an opportunity of drawing attention to the excellence of their construction, have had the rear live axle of the Gordon-Bennett Napier cut up, and sections of it submitted to the Nice Forge Co. for testing purposes. This has been done for a reason, of which I have never found Americans complain, nor by which do I believe they are ever annoyed. In this country, however, we are cursed with the existence of a very large percentage of people whose mission it is, so far as the products of their own countrymen are concerned, to go about perpetually crying "stinking fish." That is to say, that by reason of some mental lesion, some cerebral irritant, or the presence of grape seeds in the appendix, they never cease day or night to decry the productions of their own country. This has been particularly the case with the motor vehicles, and up to a certain point with reason, for France has undoubtedly shown us the way for some years. Nevertheless we are gradually lining up. A great cry, even with some people who ought to know better, has been that our Gallic neighbors employed some mysteriously and transcendantly superior qualities of steel to those used by our makers. "Wonderful steel" is the term that has been used, but all who know anything about "steel" are aware how fatuously idiotic this term sounds in the ears of the technical. There is no "wonderful steel" beyond the very best for the purpose, and that is well known to the properly trained engineer, and can be had by paying for it. To give the above kind of folk something of a quietus, Messrs. Napier & Co. did as I have above set forth, and as a matter that may have interest for American engineers, I will quote the figures of the certificate.

The diameter of the block cut from the axle for testing was .798 in. and the area of the section 5 in. The tensional strain

necessary to fracture this rod was 14 tons—31,360 lbs.—which is equal, of course, to a breaking strain of 2 tons, or 62,720 lbs per sq. in. The total elongation on the length of 2 in. before fracture took place was no less than .75 in., equal to 37.5 per cent. Does any one, English or American, suggest that tougher, stiffer metal could be used for such loads and treatment as the live axle of a vehicle like the Gordon-Bennett Napier car of 1902 is subjected to? What we now wish is some similar test of this "wonderful" French steel, which a certain Northallerton engineer, not uninterested in the importation into this country of French cars, has time and again insisted upon both at discussions at the Automobile Club and in the columns of the press.

#### The Fair Disaster

The general public here are very much shocked over the sad deaths of Mr. and Mrs. Fair in France. These regrettable occurrences dam up the course of the industry, for the many headed cannot discriminate between the dangers of a powerful car carelessly, recklessly driven, and such a vehicle in the hands of an expert driver. I hear incidentally that this most unfortunate Mr. Fair was very far from being expert, and at the time of his purchase of the very vehicle in which he and his wife came to so shocking an end, was under the impression that such a car could be started on its fourth speed.

The police persecution of automobilists evidently is to be prosecuted with vigor in the county of Sussex, through which the Reliability Trials, which start on September 1, will run every day. The county council has authorized the expenditure of the immense sum of £9 for the purchase of an electrical apparatus wherewith to take the speed of passing cars. Having regard to the mess the blue-coated gentry make of timing, or trying to time, automobiles with very common stop watches, and the extreme difficulty experienced by Mr. R. E. Phillips and others, practiced electricians, in obtaining results both at Bexhill and Welbeck, it will be interesting to notice what sort of a hash these Hodges in uniform will make of apparatus of this sort. But then, what their electrical contraption fails to record, they will easily imagine and swear to, and their sworn testimony, whether based on sound results or not, will be greedily swallowed and accepted by benches of prejudiced county magistrates.

#### THE AUSTRIAN RACES

Novel and Interesting Program for the Annual Ride and Races of the Austrian Automobile Club—The Eisenach Congress

BERLIN, Aug. 21. (Special Correspondence.)—The propositions published by the Austrian A. C. governing the annual Schottwien-Semmering ride are now made public. The event is booked for September 7, and has been divided into three categories, a race, a course-des-primés, and a selling

ride. Group A is open to all and will be run in the following sub-divisions: A, Motor bicycles; maximum weight 50 kgs; machines with electro-magnetical ignition are permitted an increase of 7 kgs. B, Motor-tricycles and quads, maximum weight 200 kgs. C, Voiturettes, maximum weight 400 kgs., with one occupant weighing at least 70 kgs. D, Vehicles weighing more than 400 kgs. up to 650 kgs., with two occupants weighing jointly at least 140 kgs. E, Vehicles weighing empty over 650 kgs., and 1,000 kgs. at the most; the two occupants to weigh jointly at least 140 kgs. Group B, Course des Primés. Open to all automobile manufacturers and dealers resident in Austria. The entry forms of cars about to participate in this division must contain the type of car, weight, seating capacity, motoric power and sale price.

The racing committee of the A. A. C. will work out, based on the information received, a limit time for each vehicle, inside of which time the course has to be accomplished. Every successful vehicle will receive a certificate from the A. A. C. setting forth all particulars. Manufacturers and dealers participating bind themselves to sell the winning cars or others of exactly the same type for the price mentioned on the entry form and to receive orders for such cars at the same price. Group C, Selling Ride. Open to all owners of automobiles. Same details as above to be given on entry sheets. The A. A. C. will decide as above a maximal time and all cars successful will receive a carriage shield setting forth the time in which the ride was accomplished. The owners bind themselves to sell within eight days after the ride for the price stated. A challenge cup is to be competed for in all three divisions jointly, the best time in all departments securing the trophy, which must be won three times in succession to become definite property of the winner. Dr. von Stern is the present holder of the cup, with a performance of 12:30%.

#### The Eisenach Congress

The third German automobile congress at Eisenach passed off very quietly indeed, the only business of any great importance being the acceptance by the congress of the new regulations for the German Automobile Association, which were immediately put into power. They govern the relations existing between the association and the clubs affiliated. The choice of president of the German Automobile Club holds good for the association as well; a somewhat autocratic ruling with which under present circumstances there is no fault to be found, but which may in the future not always find the same unanimous approval. The minutes and the accounts of the past year of working were passed without discussion and of all the clubs desirous of arranging for the next congress the offer of the Bavarian A. C. met with the greatest favor. The decision rests with the president. The motor-car show arranged for the time of the meeting was small, but fairly repre-

sentative, the motor wagons which have taken part in the test ride from Leipzig to Eisenach proving the center of attraction. Several prominent officers of the Pioneer and Railway Troops attended the congress, which fact may be construed as another proof of the growing attention paid to motor vehicles at military headquarters.

#### A Business Consolidation

The Berlin Motorfahrzeug and Motoren-Fabrik Marienfelde has accepted the proposals made by the Daimler company regarding the proposed fusion of these two factories, the Cannstatt firm thereby saving the Motorfahrzeug-Fabrik from bankruptcy, as the chief creditors had declared their intention of taking joint proceedings should they not receive satisfaction by the end of the month. The offer made by the Daimler company was a very fair one, but in any case it is not unlikely that the directors of the hardly pushed Berlin firm would have disregarded any likely proposal, as with them it absolutely meant to take whatever offered or declare themselves insolvent.

The Buda-Pesth postal authorities are highly satisfied with the motor post carts used to carry out the mail bags, and an increase in the number of carts is expected very shortly. New types of cars are also being built for the post, and will be used for conveyance of parcels. Other cities in Hungary are following Buda-Pesth's example. But as go-ahead as the Hungarian capital seems in this respect, it is very backward in regard to motor pacing tandems, for the Berlin pacers of a young racing cyclist, who were bringing his pacing implements down for him, had to be rescued from the overwhelming curiosity of the populace by means of policemen, who had to literally force a way for the poor motorists through the dense crowd.

A most unfortunate incident connected with an automobile accident has recently caused some sensation in Berlin. A young lady was invited out for a motor drive last autumn, an American of her acquaintance steering the car, which collided on the way with a tree and threw the occupants out on to the roadside. The lady escaped with seemingly slight contusions, but from this time on suffered most excruciating pains in her head, which have now rendered it necessary to convey her to the public lunatic asylum at Dalldorf.

October 3 to 12 will see a big motor show in Hamburg arranged by the Society of German Cycle Dealers, and all the large factories have taken spaces. German trade will be extremely well represented, and the hall of the Rotherbaum Velodrome, where the exhibition takes place, permits of all the stands being in the same hall, the Exhibition Palace resembling the Chief Hall of the London Crystal Palace, only on a somewhat smaller scale.





### FAST MACHINES FOR CLEVELAND

George Ford Expects to Win Handicap, Pursuit and 25-Mile Open Races—Winton to Test a New Machine—Baker Entered

CLEVELAND, O., Sept. 1. (Special Correspondence.)—The race committee of the Cleveland Automobile Club has received promises from several leading manufacturers to start machines in the race meet at Glenville on September 16. The Baker company has thoroughly rebuilt its "Torpedo" and will give it a record breaking trial. It is probable that it will also compete in a pursuit race with Winton's "Bullet" in order to settle the vexed question as to which is the faster. Winton is also bringing out a machine which has not yet been tested but which may possibly prove faster than his present flier. George Ford, of Detroit, was in the city Saturday and placed entries for both himself and Tom Cooper, who is in the employ of the Ford company. Mr. Ford stated that the two new Ford machines, especially designed for racing, are estimated to be nearly 40 per cent. faster than anything the Winton factory has yet built. Ford expects to clear up everything in the 10-mile handicap, the Australian pursuit race and the 25-mile open. He will enter in the events at Detroit and Chicago, and will then go East. Later, Ford and Cooper will go to Europe to compete in international races.

#### The New Winton Machine

In addition to the famous "Bullet," Mr. Winton will enter in the Cleveland and Detroit races a new racing machine which in general design is patterned somewhat after the "Bullet," but is smaller and lighter. Instead of a specially designed engine, it is equipped with a standard 15-h.p. Winton touring car motor, but geared higher than usual. It is expected that with the weight reduced to the point of track safety and with perfect bearings and adjustments, the regular motor will be able to furnish power enough to make the machine remarkably fast for a vehicle of its weight. However, the Winton people are not saying much about the new machine yet, since it has not been tested and it is not known how fast it will go.

#### Arranging a Star Attraction

George Collister is endeavoring to arrange what he calls an important political race. Among the probable contestants are Loftin Johnson, a son of Cleveland's mayor; H. M. Hanna, son of the Ohio senator, and R. A. Alger, of Detroit, son of the Secretary of War. Mr. Collister thinks that a race between these three would prove a star attraction.

The officials for the meet have been selected as follows: Referee, Wm. E. Metzger, of Detroit; clerk of course, William Montague Perrett, of Detroit; starter, Ned Broadwell, of Detroit; scorer, W. A. Skinkle, of Cleveland. Hon. Tom L. Johnson will probably be one of the judges. George Collister, who has started nearly every bicycle and automobile meet ever held in Cleveland, will for the first time in many years occupy a private box and watch the fun.

### CHICAGO A. C. RACE MEET

Program of Events to Be Held on Joliet Mile Track on September 27—New Classification Scheme By Ratio of Weight and Power

CHICAGO, Ill., Aug. 30. (Bureau Correspondence.)—After carefully considering the feasibility of holding its proposed race meet on one of the local tracks, the race committee of the Chicago Automobile Club has finally come to the conclusion to follow last year's plan and to again give the event at Joliet on the excellent mile track there. Saturday, September 27, has been selected, as this date brings the races into the week of the street fair at Joliet and of the Elks' carnival also held there, assuring goodly crowds and promising a profitable attendance at the races. A vigorous attempt will be made in combination with the managers of the Detroit and Cleveland meets to secure the appearance of several of the prominent eastern racing machines.

#### The System of Classification

The club will adopt a new system of classification of machines to prevent the competition of wrongly classed vehicles. It is intended to classify the entries according to the ratio of the horse power and weight, this to be determined by dividing the hundredth part of the weight into the horse power to give the horse power per 100 pounds. It is conceded by those who have studied the scheme that such a classification will make it disadvantageous to misrepresent in either direction. As a further check upon the entries, the horse power will be calculated in each case by a scale fixed upon figures determined from actual practice and which substantially resolves itself into a question of cylinder bore and piston speed.

#### The Program of Events

The five open and five classified events are scheduled as follows: One mile for stock steam machines; 5-mile open for all steam machines; 1-mile open for electrics; 1-mile for gasoline machines from .35 to

.50 h.p. per 100 lbs.; 5-mile for gasoline machines of from .50 to .70 h.p. per 100 lbs.; 10-mile for gasoline machines of over .70 h.p. per 100 lbs.; 10-mile open for all classes; 30-minute limit pursuit race for gasoline machines of from .35 to .50 h.p. per 100 lbs.; 5-mile handicap, open; club race, details to be decided.

### MILWAUKEE A. C. TO AFFILIATE

MILWAUKEE, Wis., Sept. 2. (Special Correspondence.)—C. A. Benjamin, formerly of Syracuse, but now of Chicago, attended a meeting of the Milwaukee Automobile Club last Thursday night, having come up from Chicago in his machine. In a brief talk, he advised the local body to organize a parade, as it would be of considerable value in creating interest in the club and in motor vehicles.

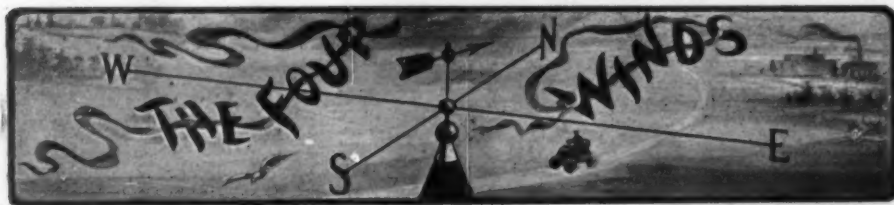
The club decided to affiliate with the American Automobile Association, and steps in that direction will be taken immediately.

The Berkshire Automobile Club, of Pittsfield, Mass., formally dedicated its new building last Thursday night with a steamed clam supper given to the friends of the members. The interior of the building was decorated with shields, flags and bunting and the supper was served by the members on several temporary tables. Following the supper, there were short speeches, including some remarks by out-of-town motorists. The reception lasted until a late hour and was thoroughly enjoyed.

The Buffalo Automobile Club now has 200 members who own their own motor vehicles, and this number is said by President Lee H. Smith to represent not more than one-fifth of the owners in the city. The club is receiving applications for membership daily, which are being held in abeyance until the new club house is ready for occupancy, when it is expected that 600 motorists will be admitted to membership. The many miles of beautiful shaded asphalt streets, the many parks and the boulevard to Niagara Falls, together with the fact that there are ten factories in the Bison City turning out from 4,000 to 5,000 motor vehicles annually, are held to account for the great interest in motoring in Buffalo.

The influx of summer visitors to Saratoga Springs has brought so many motor vehicles into that place that there is talk now of soon organizing an automobile club, for membership in which no initiation fee or dues will be charged.

Early morning rides into the country have become popular with Buffalo motorists, and numbers of them can be met any morning between 5 and 8 o'clock speeding their machines along the old Delaware road.



### WORCESTER PARADE AND RACES

Thirty-Five Vehicles in the Former—Five Oldsmobiles in One Race—Knoxmobile and White Win from Long Distance and Stanley

A motor vehicle parade and automobile and motor cycle races were the features on Labor Day of the Cattle Show at Worcester, Mass. The parade started at 9:30 A. M. and was around the race track. It was in charge of Dr. Roy Garfield and was led by Clarence C. Sears. There were 35 vehicles in line as follows: Six each Oldsmobiles and Knoxmobiles, 4 Lo-comobiles, 2 each Mobiles, Grout, White and U. S. Long Distance, 2 Morgan steam trucks, 1 each DeDion, Stanley and Standard and 4 unidentified.

There were four automobile race events. The first was an open 2-mile race for gasoline machines weighing 1,000 to 2,000 lbs., and was run in two heats and a final. In the first heat were three starters—J. E. Cowan, 6-h.p. Knoxmobile; C. E. Wakefield, 8-h.p. Knoxmobile; and John Harrington, 7-h.p. Autocar. After a flying start, Cowan took the lead and kept it, winning in 4:26 for the two miles, with Wakefield nearly a quarter lap behind, and Harrington a bad third.

The starters in the second heat were Charles Crompton, 7-h.p. U. S. Long Distance, and R. G. Bicknell, 6-h.p. Knoxmobile. Crompton took the pole at the start, but lost it on the first turn to Bicknell, who started in to make a fast win and led by 200 yds. at the half mile. Then his machine became disabled and he got out to fix it. When he got started again Crompton had gained a lead of quarter of a mile. Bicknell then gained rapidly, but came to a stop again on the next lap, and Crompton won in the slow time of 7:14 1/4.

Cowan (Knoxmobile) and Crompton (U. S. Long Distance) started in the final, which was an easy victory for the former, who won by a lap in 4:27.

H. L. Johnson, in a White stanhope, and Paul Morgan, in Fred S. Taylor's White steamer, were the only starters in the 2-mile race for steam machines of 6 h.p. The contest was rather close for the first mile and then something went wrong with the machine operated by Mr. Morgan, and Johnson increased his speed and finished in 4:01 1/2.

There were five starters in the race for 800-lb. gasoline machines, all driving Oldsmobiles. They were C. C. Sears, J. C. Sawin, F. H. Hamblin, T. J. Toner and Edward Entwistle. As soon as they crossed the tape Toner took the lead and

held it throughout, although at the end of the first mile Entwistle rapidly cut down Toner's lead to 20 yds., finishing second, with Hamblin third, Sawin fourth and Sears last. Toner's time was 6:14.

A special match race was run between H. L. Johnson in B. A. Robinson's White steamer and C. S. Hathaway in a Stanley steamer. This event proved interesting, the White quickly opening up a lead of 30 yds. before the back stretch was reached, then rapidly increased this to 180 yds. at the finish. The White carriage had its stanhope top on and carried its regular road outfit of tools. Hathaway had the pole and Johnson took the outside of the track. The going was fast, the times being as follows: Half-mile, 1:05 1/2; one mile, 1:57 1/2; one and a half miles, 2:52 1/2; two miles, 3:49 1/2.

The automobile events were followed by the motor cycle races.

### THE MATTHEWS ACCIDENT

A sad accident that occurred near Elberon, N. J., on August 26, resulted in the death of Frank J. Matthews, of Jersey City, and Mrs. W. B. Cobb, of Richmond City, and more or less seriously injured Mrs. E. D. Pizzini, of New York; Rev. Patrick J. Grant, of the Church of the Paulist Fathers, New York; Rudolph Meyers, chauffeur for Mr. Matthews, and William H. Havens, a gardener. The party had left Asbury Park in Mr. Matthews' Rochet-Schneider car, and, after driving along Ocean Boulevard, turned at Elberon into Park avenue. Mr. Matthews had taken the steering wheel from his chauffeur, and just as he arrived at the top of an incline to cross a viaduct over the New York & Long Branch railroad, he was confronted by a gardener crossing the bridge. He swung out to pass the man, but it appears the gardener stepped to the same side. In the confusion the wheels caught in the street car rails and the machine was deflected against the bridge railing. It crashed through this and plunged over the side to the railroad tracks 30 feet below. The gardener was knocked down and bruised, but the chauffeur, who was standing on the back step, jumped just as the car went over, being somewhat hurt, but not seriously. In descending, the machine turned a somersault and landed upside down. Mr. Matthews evidently struck a rail with his head and was instantly killed, the car landing on top of him. Both his hips were dislocated and one arm was broken. Both women were knocked unconscious, but Father Grant retained consciousness

throughout. The dead and injured were removed on the train to Long Branch, where Mrs. Cobb died in the hospital. Mrs. Pizzini's injuries are not considered dangerous.

Mayor Fagan, of Jersey City, has been so impressed with the fatal accident at Elberon, where the Matthews party ran off the railroad bridge, that he has given orders to the police department to strictly enforce the speed ordinance on Mercer Street, from the viaduct to Henderson Street, a favorite thoroughfare of motorists, as a preventive of other accidents.

### MAYOR JOHNSON AIDS TOURISTS

CLEVELAND, O., Aug. 30. (Special Correspondence.)—J. K. Secor, H. C. Vortiede and F. W. Conant, of Toledo, made a run from Toledo to Cleveland this week in a touring car owned by Mr. Secor. As the machine pulled up in front of the Hollenden Hotel, two policemen notified the driver that the machine had no Cleveland license number, and, despite protests, placed the party under arrest. A friendly Clevelander called up Mayor Johnson and explained the situation. The mayor promptly ordered the party released and extended an invitation to Mr. Secor and party to call at his Euclid Ave. residence and accept the loan of his license number for the day, which they did, incidentally enjoying some of the mayor's proverbial hospitality. The party took in all the sights, protected by the "No. 44" which is known to every policeman in Cleveland.

Mayor Johnson immediately drafted an amendment to the automobile ordinance, providing that touring motorists may spend three days in Cleveland without being subject to the local license. It will be passed at the next council meeting.

### A MOTOR MILK WAGON

Herbert Crane, of Racine, Wis., is one of the most up-to-date milk dealers in the country. He has adopted the motor vehicle for delivering milk and is making a great success of the venture. He has attached to the rear end of his machine an equipment sufficient to carry three large cans of milk. A canopy top covers the entire vehicle as in horse-drawn milk delivery wagons. Speaking of the venture, Mr. Crane says: "The cost of running the automobile is but from 15 to 20 cents per day for the fuel I use, and a horse is therefore not in it at all; neither has a horse the endurance and speed of the automobile."

### ECONOMY IN MAIL COLLECTION

MILWAUKEE, Wis., Sept. 2. (Special Correspondence.)—A test of collecting mail with an automobile was made yesterday by George Odenbrett, of the Bates-Odenbrett Automobile Co. Mr. Odenbrett, accompanied by Mail Collector Horner, started from the post office at 1:20



P. M. to make the afternoon collections. They completed a circuit of seven miles and collected mail from eighty-seven boxes in 100 minutes. Under the old system the wagon having the same territory to cover did not get through until 5:30 P. M. Mr. Odenbrett says the use of automobiles would save the government \$1,000 yearly on every route where two horses are required. He will have a conference with Postmaster Stillman in a few days regarding the advisability of employing them in Milwaukee.

#### BUSINESS MENTION

The Century Steam Carriage Co., of Syracuse, N. Y., has received a flattering proposition from local parties to open an agency in Syracuse for its new gasoline touring car. If negotiations are concluded the parties will place orders for twenty-five of the gasoline "Tourists" to be delivered in the early spring. The company has just issued a new catalogue, showing the different types of its steam machines. A catalogue for gasoline and electric vehicles will be issued later. The first "Tourist" will be out about September 10. The company put on six new men last week and will increase the force right along.

The Oldsmobile Co. of Washington has extended its business by becoming distributing agent for the Autocar, made by the Autocar Co. of Ardmore, Pa. It is now distributing agent for the Oldsmobile and the Autocar for Delaware, Maryland, Virginia and the District of Columbia. It will change its name to the National Capital Automobile Co. and expects soon to open a branch office in Baltimore and to establish sub-agencies at various points where business warrants.

The H. H. Franklin Co., of Syracuse, N. Y., has sold one of its light roadster automobiles to Max C. Fleischmann, of Cincinnati, Ohio. The sale was made through Joseph P. Bridges, Mr. Fleischmann's expert chauffeur, who went to Syracuse for the purpose. The body will be finished in white, with nickel trimmings and blue running gear.

Schuyler Zent, of Marion, Ohio, is about to place on the market a gasoline machine which made a very creditable showing at an endurance test held in Kansas City recently. The Ferguson Implement Co., of that city, has taken the agency for the machine. Mr. Zent will form a company at Marion for the purpose of pushing the machines on a large scale.

One of the first machines turned out by the Sandusky Automobile Mfg. Co. was given a severe road test last week by J. J. Hinde and M. J. Caswell, who made a run to Fostoria, Ohio, and return, about 100 miles, in slightly more than 5 hours. The company is receiving inquiries from all parts of the country and its outlook is promising.

Charles E. H. Fayerer-Hickey, a young Englishman who has been with the Goodyear Tire & Rubber Co., of Akron, for the past year, has been appointed to the position of assistant manager of the motor tire department. The manager of the department is J. W. Dingham.

The Jacob Hoffman Wagon Works, of Cleveland, Ohio, is manufacturing bodies for several manufacturers of this city and elsewhere, and is working up a considerable reputation in this line. The company is one of the old time carriage concerns of Cleveland.

The Crest Mfg. Co., of Cambridge, Mass., is building a new model Crestmobile with tonneau body that will soon be ready for the market and which will be sold in a connection with the company's light Crestmobile runabout.

The Salem Chemical and Supply Co., of Salem, Mass., is preparing a special cold test cylinder gas engine oil especially for automobile use. It is put up in tin cans of convenient size. This company also prepares a cream white waste that is free from lint.

A 60-mile round trip to Arverne and back on one charge of the batteries was made last week by A. L. Simpson, president of the Ajax Motor Vehicle Co., of New York, in one of the company's little runabouts.

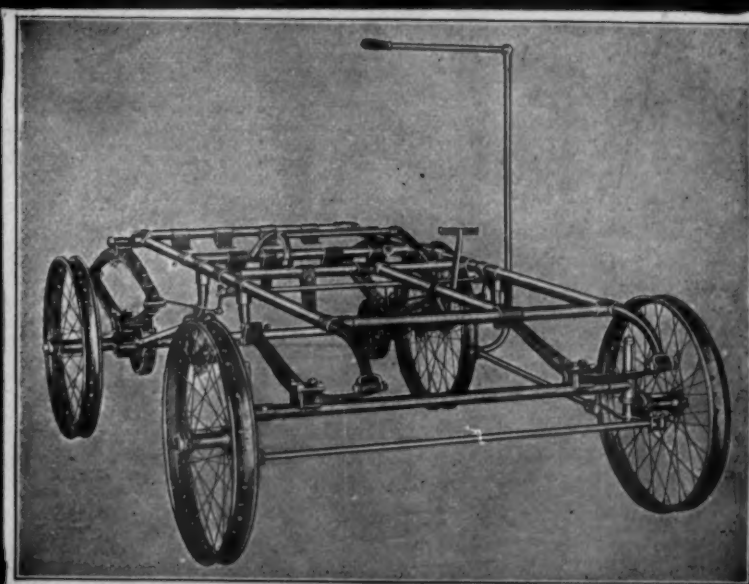
A 100-page catalogue and price list of nuts, bolts, washers and other carriage and vehicle hardware is issued by the Upson Nut Co., of Unionville, Conn., and Cleveland, O.

The report that there was to be an advance in the price of the Oldsmobile runabout, to take effect at once, has been officially denied.

## HERCULES RUNNING GEARS

### FOR ELECTRIC AND GASOLINE VEHICLES

There are no weak spots in these gears. Don't confound them with gears which have been hastily constructed to meet an early demand from automobile makers.



We also solicit orders for parts of these gears. Their design is original and the construction is sound. Prices and particulars of construction sent upon application.

FEDERAL MANUFACTURING COMPANY  
SMITH STAMPINGS FACTORY  
Milwaukee Wisconsin

# STORAGE, REPAIR AND SUPPLY STATIONS

## CONNECTICUT

**SPEED**—Outside city limits, 15 m.; inside, 12 m.; reduce at crossings; penalty for violation, not more than \$200. **HORNS or GONGS**—Not required by letter of law. **LAMPS**—Required on all rubber-tired vehicles; must be lighted from 1 hour after sunset to 1 hour before sunrise; penalty, \$5. If lights go out, operator "may proceed at 6 m. and give audible signal as often as 500 ft. are passed over."

### HARTFORD

304 ALLYN ST. Phone 219-2  
S. A. Miner. Phone Will Bring Our Repair Car Anywhere. Storing, Repairing, Charging, Gasoline. Always open.

43 WELLS ST. Phone 165  
Hartford Automobile Station. Open day and night. Storing, Repairing, Charging, All Supplies.

### NEW HAVEN

**SPEED, ETC.**—See state law. **PARKS**—Not allowed in some. **HORNS or BELLS**—Not required by letter of law.

## DIST. OF COLUMBIA

### WASHINGTON

**SPEED**—Outside city limits, 15 m.; off car-line streets, 12 m.; on intersecting car-line streets, 5 m. **LICENSE**—Required; fee, \$3; penalty, for operating steam vehicles without permit, \$1 to \$40.

### ILLINOIS CHICAGO

**SPEED**—Everywhere in town, 8 m. **BELLS**—Required, to be sounded at street crossings, etc. **WHISTLES and HORNS**—Prohibited. **LAMPS**—Required; must be lighted between dusk and dawn. **LICENSE**—Operators required to have license; fee, first year, \$3; thereafter, \$1. **NUMBERS or INITIALS**—Not required. **BRAKES**—Two sets required, one independent of driving gear. **SPECIAL**—No machinery may be left running when vehicle is standing in street with no one in charge.

5311-13 COTTAGE GROVE AVE. Phone Drexel 9363  
C. A. Coey & Co., Agents for Woodruff Automobiles. Storing, Repairing, Renting and Supplies.

4 CALHOUN PLACE, near Dearborn. Tel. Central 4334  
A. J. Millman. Storing, Repairing, Remodeling and Supplies.

285 N. STATE STREET. Telephone North 1430  
Chicago Automobile Repository Co. Storage, Repairing, Remodeling and Supplies.

385 E. SUPERIOR STREET. Rear. Tel. North 1522  
North Division Auto. Co. Automobiles Sold, Repaired, Charged and Stored.

VAN BUREN and OAKLEY BLVD. Phone West 252  
Hagmann & Hammerly. Storage, Repairing, Remodeling. Agents Remington.

## MASSACHUSETTS

**SPEED**—Outside city limits, five district or thickly settled part of a town, 15 m.; inside such limits, 10 m.; approaching horses, reduce speed if animal shows fright and stop on signal of driver; reduce at crossings. **PENALTY**—Fine not exceeding \$200, or imprisonment not exceeding 10 days, or both.

### BOSTON

**SPEED**—In city streets, 10 m.; in parks, 8 m.; outside city, 15 m. **LAMPS**—Three required. **PARKS**—Permit required from Park Department.

43 AND 45 COLUMBUS AVENUE  
G. T. Gould, Boston Agency for the U. S. Long Distance Car.

147-153 COLUMBUS AVENUE  
Columbus Automobile Exchange—A. J. Coburn & Co. Automobiles and Motor Cycles. Sole Agents for Orient, Elmore, Crestmobile, French Darracq Cars.

147-153 COLUMBUS AVENUE. Phone 388-2 Tremont  
Columbus Automobile Exchange, New England Agents for Steam and Gasoline Automobiles. Storage, Repairing, Supplies.

Entrances Clarendon & Stanhope Sts. Tel. 251-9 Trem't  
Back Bay Hydro-Carbon Repair Co. Gasoline Car Repairing a Specialty. All Work Done by Experts. First-class Storage Station.

68-68 STANHOPE STREET. Telephone 211 Tremont  
Automobile Headquarters. Eastern Agts. for Knox, St. Louis, Gasmobile, Stearns, Pierce Motorettes. Also French and American Touring Cars. Open night and day the year 'round. TREMONT and BERKLEY STS. Phone 1097 Tremont  
Boston Salesrooms, Odd Fellows Building. "White Steamers." Stanhopes, Phaetons and Touring Cars. First-class Storage and Repair Stations.

### CAMBRIDGE

424 MASS. AVE. Phone 142 Cambridge  
Crest Mfg. Co. Repairing, All Supplies. Expert Mechanics and Electricians Furnished. Makers of Crestmobile; \$600. Crest Gasoline Motors, Colls and Parts.

8-10 PALMER STREET. 72-2 Cambridge  
Harvard Automobile Co. Storing, Charging, Repairing, Building, Always Open.

### SPRINGFIELD

36-38 DWIGHT ST. Phone 869-12  
Automobile Headquarters. J. E. Cowan, Mgr. Storing, Repairing, Charging, Supplies.

60 MAIN. Phone 853-4  
Springfield Automobile Co., Agents for Steam, Electric and Gasoline Automobiles. Storing, Repairing, Supplies.

### WORCESTER

**SPEED**—10 m. **GONG or HORN**—Required. State law applies.

43 FOSTER, corner COMMERCIAL. Phone 659-4  
Worcester Automobile Station, No. 1. Agents for Packard, Oldsmobile, Autocar and Rambler. Storing, Charging, Repairing, Supplies. Always open.

671-673 MAIN ST. Phone 1550  
Robinson Automobile Station, Agents for U. S. Long Distance, White, Locomobile, Waverley. Storing, Charging, Repairing, Supplies.

## MICHIGAN

### DETROIT

265-267-269 JEFFERSON AVE.  
W. E. Metzger, Agent for Waverley, Columbia, Baker, Olds, Toledo, Winton, Mobile and Geneva. Repairing and Charging Station.

## NEW JERSEY

### ATLANTIC CITY

1003 ATLANTIC AVE. Phone, Local 677. L-Distance 63A  
J. C. W. Parsons, Agent for Locomobile and Electric Automobiles. Storing, Repairing, Gasoline and Supplies. Open always.

12 SO. MARYLAND AVE. Phone 544XBell  
H. W. Cochran, Agent for Electric Vehicle Co. Charging, Storing, Repairing, Gasoline, Supplies.

### NEWARK

**SPEED**—In Newark, 8 m.; outside Newark, in Essex County, 15 m.; rounding corners, 4 m. **HORN or BELL**—Required to be sounded 100 ft. from other vehicles. **LAMPS**—One required, to be lighted 1 hour after sunset. **LICENSE**—Required; fee, 50 cents. **INITIALS**—Required on vehicle.

MECHANIC STREET, 27. Phone 3071 Newark  
W. B. Dodge. Agent Electric Vehicle Co. Charging, Repairing, Storing and Supplies.

### PATERSON

450 BROADWAY. Telephone 2433  
Agent for French Darracq, Oldsmobile, U. S. Long Distance, Locomobile, Prescott and Waverley. Storing, Charging, Repairing and Supplies.

## NEW YORK

**COCKS LAW—SPEED**—Outside corporate limits, 20 m.; on bridges, 4 m.; inside corporate limits, 8 m., except where higher speed is permitted by local ordinance. **PENALTY**—A fine not exceeding \$50, or imprisonment not exceeding 6 mos., or both. **HIGHWAY LAW** (Doughty)

**SPEED**—Outside built-up parts of towns and villages, 15 m.; in built-up sections of towns, 8 m. Must stop on signal of driver to let restive horses pass. **REGISTRATION**—Owner must obtain certificate from Secretary of State within 10 days after purchasing vehicle; fee, \$1. **INITIALS**—Required to be fixed to back of vehicle

and must be 3 ins. high and 1/4 in. wide. **LAMPS**—Two required showing white light in front; also red light visible behind; must be lighted between from 1 hour after sunset to 1 hour before sunrise. **BELL or HORN**—One or other required. **BRAKES**—Required to be good and efficient; penalty, fine not exceeding \$25. **LOCAL ORDINANCES**—The state road law prohibits local town and park boards from excluding automobiles and bicycles from open public highways; from placing lower speed limits than 8 m. and 15 m. in unbuilt-up parts of towns, and from requiring license or permit except from owners of public vehicles.

### ALBANY

**SPEED, LIGHTS, ALARM, INITIALS, ETC.**—State law applies. **BRIDGE TOLL**—Single seat, 10 cents; double seat, 15 cents.

### 97-99-101 CENTRAL AVENUE

Automobile Storage & Trading Co., General Agency for Automobiles. Storage, Supplies, Repairs. Competent Attendants.

167 NORTH PEARL STREET. Long Distance 967  
Albany Automobile Works. Motor Vehicles of all Types Stored and Repaired. Machine Shop Attached. Charges Moderate.

255 SHERMAN STREET. Phone 257F West  
C. F. Weeber Mfg. Works. The Largest and Best Equipped Automobile Repair Shop in the city. Mfr. of Weeber Muffler.

### BROOKLYN

712 BEDFORD AVE. Phone 537 Williamsburg  
Lincoln C. Cochou. Charging, Storage, Repairs. Batteries a specialty.

752 BEDFORD AVE. Phone 2356A Williamsburg  
J. W. Mears, Exclusive Agency U. S. Long Distance Car. Automobiles Stored, Repaired, Sold and Exchanged.

1148 BEDFORD AVE. Phone 853 Bedford  
Arthur R. Townsend, Agent Waverley Electric, Toledo, Knox, International Gasoline Car. Mobile. Charging, Storing, Repairing, Supplies.

10 CLINTON ST., near Bridge. Phone 1225 Main  
Maltby Mfg. Co., Agents for Mobile, Olds, National Electric. Storage, Repairs, Batteries Charged, All Supplies.

342 FLATBUSH AVE., near Eighth. Phone 1681 Main  
International Motor Car Co. Charging, Storage, Repairing, Supplies. Open day and night.

473 FLATBUSH AVE. Phone 618 Flatbush Ave.  
Alex. Schwalbach. Agent for All Popular Makes. Motor Cycles and Their Repairs a Specialty. Practical Repairer of Gasoline Automobiles. Carriage Tires Repaired and Replaced. Bicycles. Long Island Agent for the Racycle.

1239-43 FULTON ST., nr Bedford Av. Phone Bedford 705  
Brooklyn Automobile Co., Agents Haynes-Ap- person, Oldsmobile, Locomobile. Charging, Repairing, Supplies.

1241 FULTON ST. Phone 705 Bedford  
Chas. W. Spurr, Jr., exclusive agent for Brooklyn and Long Island for Crestmobile. Price \$600. Call and take a ride.

3 PROSPECT PARK WEST. Phone 969 Prospect  
Prospect Park Storage Co., Agents National Electric. Charging, Repairing, Storing, Supplies.

58 SCHERMERHORN ST. Phone 3710 Main  
Patterson & Shaw, Agents Elmore, Gasmobile, Waverley. Storage, Repairing, Charging, Supplies.

### BUFFALO

**SPEED**—8 m.; on Main Street, south of Chip- pewa, 5 m.; rounding corners and at street and alley intersections, 5 m. **HORNS or GONGS**—Not required. **LIGHTS**—Required all hours after nightfall. **REGISTRATION, etc.**—State law applies.

### NEW YORK CITY

**SPEED, LAMPS, BELLS, LICENSE**—See state laws. **FERRIES**—Will carry any class of vehicle with tanks filled if engine is stopped and fire extinguished; toll, same as for teams. **BRIDGE TOLL**—Same as for teams.

38th ST. 136 WEST. Phone 476 38th St.  
Standard Automobile Co., Sole U. S. Agents for the Decauville French Car. Also American Gasoline Cars. Thoroughly Equipped Repair Shop. Employing Only Skilled Mechanics. Parts, Replacements, Supplies and Storage.

38th ST. 138 WEST. Phone 6684 38th St.  
The Oldsmobile Co. New York Agents Oldsmobile Gasoline Runabouts.

43d, 38-40 WEST. Telephone 691—38th.  
A. G. Spalding & Bros., Agents for the Auto- cars, Mobiles, Oldsmobiles and Waverley Elec- trics. Charging, Repairing, Storing, Supplies. Open Day and Night.

43d ST. 50 WEST. Telephone 2289—38th  
Banker Bros. Co., Agents for Peerless Gasoline Cars, Pierce Motorettes and De Dion Parts. Storage, Repairs, Charging and Supplies. Open Day and Night.

44th ST. 307 WEST. Tel. 6486B 38th St.  
Long Acre Auto Depot. Storing, Repairing, Supplies. Second Hand Machines Bought and Sold.



44th ST. 523 FIFTH AVE. Tel. 6029 38th St.  
Westchester Auto. Co. Agents for Leading  
French and American Automobiles. Storage,  
Repairs, Supplies, etc.

50th ST. 239 WEST. Tel. 902 Columbus  
Alexander Fisher. The Georges, Richard, Mer-  
cedes, Rochet-Schneider.

53d STREET, 1684 BROADWAY. Phone 2397 Col.  
Central Automobile Co. Sole U. S. Agents for  
Pugeot, Mora, Cottreau. N. Y. City Agents  
Electric Vehicle Co. of Hartford. Charging,  
Storing, Repairing. Parts for French Vehicles.  
All Kinds of Supplies. Open Day and Night.

57th STREET, 140 EAST. Phone 1161 38th St.  
John Wanamaker. Fournier-Searchmont, Bak-  
er, Mobile. Charging, Storing, Repairing and  
Supplies. Open Day and Night.

57th ST. 154 EAST. Phone 3473-38th St.  
Metropolitan Motor Car Co. Expert Repairs  
for All Makes of Vehicles. Charging and Sup-  
plies.

58th ST. 150-152 EAST. Telephone 4421-38th St.  
Winton Motor Carriage Co., Branch House.  
Storage and Repairs for Wintons Only.

59th ST. 306 WEST. Telephone 2060 Columbus  
A. Elliott Ranney, Agent for Remington, Pres-  
cott, Darracq, Waverley and Toledo. Storage  
and Supplies.

59th ST. WEST, 317-319. Telephone 623 Columbus  
Adams-McMurtry Co., Agents for Packard Gas-  
oline Cars. Repairing, Supplies.

60th STREET, 10 WEST. Phone 1874 Col.  
Webster Auto. Co. Agents Webster Gasoline  
Tonneau Car, Prescott Steam Carriages. All  
Makes of New and Second Hand Carriages  
Purchased, Exchanged and Sold. Storage, Re-  
pairs and Supplies.

66th ST. 57 WEST. Tel. 1271 Columbus  
St. Nicholas Automobile Depot. Storage,  
Charging, Repairing and Supplies. Open Day  
and Night.

80th ST. 250 WEST. Phone 2562 Riverside  
Pa-delford & Bell, Agents for Columbia Elec-  
tric Automobiles. Salesroom, Storing, Repair-  
ing, Supplies.

86th ST., 205-207-209 EAST. Tel. 3269-79th St.  
Yorkville Auto. Station. Exceptional Storing  
Facilities. Repairing and Supplies.

98th ST. and FIFTH AVE. Telephone 2369-79th St.  
E. R. Fisher, Prop. Storing and Repairing  
Steam and Gasoline Only. Supplies.

100th ST., Cor. Broadway. Tels 2686 & 2687 Riverside  
Homan & Schuls, Sole New York Agents for  
Northern Gasoline Runabouts. Also Agents  
for Darracq, Locomobile, Waverley and Woods.  
Best Facilities for Difficult Repair Work.  
Storage, Charging and Supplies.

120th ST. 175 EAST. Phone 1444 A Harlem  
Chas. Strathman, Agent for Mobile. Storing,  
Repairing and Supplies.

127th ST. 152 WEST. Phone 3326 Harlem  
West End Automobile Exchange. Storing, Re-  
pairing, Cleaning, Supplies. Always open.

127th STREET, 153-159 WEST. Phone 1549 Harlem  
Harlem Automobile Co. Storing, Charging,  
Repairing and Supplies. Tire Vulcanizing on  
Premises.

## SYRACUSE

SPEED, ETC.—See state law. No local legis-  
lation.

346-348 SO. WARREN ST. Phone 955 New  
Syracuse Automobile Co. (Incorporated), Agents  
for Locomobile, Oldsmobile, Waverley. Stor-  
age, Repairs, Gasoline and Lubricants. Spe-  
cial Attention to Tourists.

110 WEST ONONDAGA ST. New Phone 2186 A  
Hoffman & Weaver, Agents for the "Mobile."  
Finest Equipped Repair Shop in City. Sun-  
dries and Storage.

## TROY

359-361 FULTON STREET. Phone 399M  
James Lucey, Automobile Exchange. Stearns,  
Gasoline and Electrics. Storing, Charging, Re-  
pairing, Gasoline.

## UTICA

ONEIDA SQUARE. Phone 884-A  
Miller-Mundy Motor Carriage Co., Agents for  
White Steamer, Pierce Motorettes, Waverley  
Electrics. Storing, Repairing, Charging.

## OHIO

### CLEVELAND

SPEED—Within  $\frac{1}{4}$ -mile from east and west  
ends of Superior Street viaduct, 7 m.; outside  
such radius, 15 m. Must stop upon signal from  
horse driver. LICENSE—Required; fee, \$1.  
NUMBERS—Registered numbers must be at-  
tached at rear and kept clean. LAMPS—One on  
each side must be kept lighted during darkness.  
BELL or HORN—Required, and must be sound-  
ed when there is danger of accident. PENALTY  
—For violation of any section, fine not exceed-  
ing \$50.

### COLUMBUS

SPEED—Off of business streets, 14 m.; on busi-  
ness streets, 8 m. PENALTY—Fine from \$5 to  
\$50 or 30 days' imprisonment. BELLS or HORN

—One or other required, to be sounded when  
necessary. LAMPS—Required after dark. PEN-  
ALTY—Fine not exceeding \$50.

## TOLEDO

SPEED—Inside city limits, 10 m.

### CINCINNATI

SPEED—In streets and parks, 8 m. HORNS  
or GONGS—Must be sounded 100 ft. before street  
crossings. LAMPS—Must be lighted between  
sunset and sunrise. BRAKES—Efficient brakes  
required. LICENSE—none required. INITIALS  
—None required. TOLLS—Bridge toll, 10 cents.  
SPECIAL—Two vehicles must not travel abreast.

## PENNSYLVANIA

### PHILADELPHIA

SPEED—Inside city limits, 7 m. Parks, same.  
BELLS or GONGS—To be sounded only at  
crossings. LAMPS—Required. PARKS—State  
law limits speed to 7 m. LICENSE—Required in  
parks; fee, 25 cents. NUMBERS—Must be at-  
tached at rear of vehicle in parks. TOLLS—No  
bridge tolls, but main roads have toll gates  
each 2 or 3 m.; charge same as for 2-horse  
team. FERRY—Charge same as for 2-horse  
team.

ARCH 1319. Phone 3-27-38

Winton Motor Carriage Co. A. E. Maltby, Mgr.  
Repairing, Supplies—Winton Cars only.

138-140 N. BROAD ST. Phone 1-42-51A

Quaker City Automobile Co., Agents for Olds-  
mobile. Storing, Repairing, Supplies. Open  
day and night.

N. BROAD 250-256. Phone 1-37-42  
Pennsylvania Electric Vehicle Co., Exclusive  
Licensees of Pa. for Columbia Automobiles.  
Charging, Storing, Repairing, Supplies.

N. BROAD ST. 304. Phone 1-33-83  
Broad St. Automobile Station, Agents for Pan-  
hard, Richard, Spalding and Crestmobile. Stor-  
ing, Charging, Repairing, All Supplies. Open  
day and night.

23d and WALNUT STS. Phone 1-38-65  
John Wanamaker. Fournier-Searchmont, Bak-  
er, Mobile. Charging, Storing, Repairing and  
Supplies. Open day and night.

### PITTSBURG

SPEED—In city streets, 12 m.

## RHODE ISLAND

SPEED—Outside compact parts of cities and  
towns 10 m.; inside, 8 m.; reduce at crossings.  
INITIALS—Resident owners must display ini-  
tials in block letters 2 ins. high. BELLS and  
HORNS—One or other required, but must not  
be used excessively. MUFFLER—Required at  
all times on public highway. PENALTY—Fine  
of \$10 or 10 days' imprisonment for first of-  
fense; doubled for subsequent violations.

## PROVIDENCE

SPEED—In city, 10 m. LAMPS—Three re-  
quired.

OPPOSITE UNION STATION. Telephone 1058

H. G. Martin & Co., Agent Winton, Locomo-  
bile, Elec. Veh. Co. Storing, Charging, Re-  
pairing, All Supplies. Always Open.

## WISCONSIN

### MILWAUKEE

SPEED—Inside city limits, 5 m.; in crowded  
places and street crossings, 4 m. LICENSE—  
Required; fee, 25 cents. NUMBERS—License  
number must be affixed to vehicle in conspicu-  
ous place. BRAKES—Required to be able to  
bring vehicle to stop in 10 ft. at 8-m. speed.  
BELL—Required. LAMPS—Two required, show-  
ing white in front and red behind. PENALTY—  
Fines not to exceed \$50 or imprisonment not ex-  
ceeding 90 days.

501 BROADWAY. Phone Black 8072

Bates-Odenbrett Automobile Co. Storage, Re-  
pairing and Supplies.

## Index to Advertisers

American Coil Co.	31
American Darracq Automobile Co.	39
American Machine Mfg. Co.	31
American Roller Bearing Co.	28
American Tubular Wheel Co.	30
Audel & Co., Theo.	25
Aultman Co.	31
Automobile & Marine Power Co.	36
Automobile Headquarters	24
Automatic Lubricator Co.	28
B. & P. Company	34
Back Bay Hydro-Carbon Repair Co.	21
Baker Motor Vehicle Co.	36
Balkwill Pattern Works	26

Barnes Co., Wallace	34
Benley & Co., Chas. H.	29
Bishop & Babcock Co.	25
Boston Salesrooms	24
Bowser & Co., Inc., S. F.	29
Brazier, H. Bartol	25
Bray Mfg. Co.	30
Brecht Automobile Co.	34
Briscoe Mfg. Co.	29
Buffalo Automobile & Auto-Bi Co.	35
Carlisle & Finch Co.	31
Carter, B. J.	28
Chicago Motor Vehicle Co.	37
Chisholm & Moore Mfg. Co.	28
Cincinnati Panel Co.	26
Clark Tire Co.	25
Cleveland Faucet Co.	25
Cleveland Wire Spring Co.	24
Coburn, A. J. & Co.	29
Columbia Lubricants Co.	29
Columbus Automobile Exchange	24
Conrad Motor Carriage Co.	38
Cotta Automobile Co.	25
Crest Mfg. Co.	28
Cutler-Hammer Mfg. Co.	31
Dayton Electrical Mfg. Co.	22
Detroit Carriage Mfg. Co.	26
Diamond Rubber Co.	26
Dietz Co., R. E.	40
Dixon Crucible Co., Jos.	25
Du Bois Automobile Agency	24
Dunbar Brothers	34
Dyke, A. L.	31
Dyson, Jos. & Son	30
Eldredge Electric Mfg. Co.	37
Electric Vehicle Co.	37
Elmore Mfg. Co.	36
Elwell-Parker Electric Co.	33
Essex Brass Co., G. B.	29
Federal Manufacturing Company	21
Fournier-Searchmont Automobile Co.	38
Frantz Body Mfg. Co.	26
Friedman Automobile Co.	37
Funke, A. H.	33
G & J Tire Company	35
Garden City Spring Works	34
Gould, G. T.	24
Gould Storage Battery Co.	31
Grant-Ferris Co.	34
Greene, Tweed & Co.	29
Grout Bros. Co.	24
Halliday, C. H.	26
Hansen Automobile Co.	38
Hathaway, J. F.	31
Haynes-Apperson Co.	37
Helios-Upton Co.	32
Henricks Novelty Co.	31
Hoffman Motor Co.	34
Holley Motor Co.	32
Hottel Bros. Co.	26
International Motor Car Co.	38
Jarvis Engine & Machine Works	26
Knowles, C. S.	24
Knox Automobile Co.	38
Konigslow, Otto	30
Lobbe Pump Co.	25
Locke Regulator Co.	26
Mason Regulator Co.	34
Miller, Chas. E.	32
Miscellaneous Advertisements	24
Mosler, Arthur R.	31
Motor Cycle Mfg. Co.	36
Mueller, Herman C.	32
Munger Automobile Tire Co.	35
Naugatuck Mfg. Co.	24
Neustadt-Perry Co.	30
Nevermyss Fire Extinguisher Co.	24
Nungesser Electric Battery Co.	32
Ohio Automobile Co.	39
Olds Motor Works	28
Overman Automobile Co.	25
Pittsburg Reduction Co.	28
Prescott Automobile Mfg. Co.	36
Randolph-Clowes Co.	28
Raymond, A. H.	25
Reliable Water Gauge Co.	26
Reliance Gauge Column Co.	26
Roche, Wm.	31
Roger, C. E.	28
Rutenber Mfg. Co.	33
St. Louis Motor Carriage Co.	36
Salem Chemical & Supply Co.	29
Salmadrine Boiler Co.	27
Scott Motor Works	38
Scoville & Peck Co.	25
Shaeffer, Bunce & Co.	24
Shelby Steel Tube Co.	28
Smelser Engine Co.	33
Special Notices	22
Standard Oil Co.	29
Standard Welding Co.	30
Steam Carriage Boiler Co.	26
Stearns & Co., F. B.	28
Storage, Repair and Supply Stations	22
Studebaker Bros. Mfg. Co.	39
Taunton Automobile Co.	26
Tonkin Boiler Co.	26
Towle, Herbert L.	24
Truscott Boat Mfg. Co.	32
Tube Bending Machine Co.	31
Turner Brass Works	25
Upton Machine Co.	34
Waterbury Brass Co.	28
Watkins, Frank M. & Co.	24
White Sewing Machine Co.	35
Wilson Carriage Co., C. R.	26
Wilson, F. Cortes & Co.	29
Winton Motor Carriage Co.	37
Wolverine Motor Works	31

## Boston Automobile Agencies

### Automobile Headquarters

66-68 Stanhope St., BOSTON  
STORING RENTING REPAIRING  
Eastern Agents for Knox, St. Louis, Gasmobile,  
Stearns, Pierce Motorettes. Also French  
and American Touring Cars  
Open night and day the year 'round. Phone 211 Tremont

### Back Bay Hydro-Carbon Repair Co.

Entrances on Clarendon and Stanhope Sts.  
BOSTON, MASS.

GASOLINE CAR REPAIRING A SPECIALTY  
ALL WORK DONE BY EXPERTS  
First Class Storage Station. Phone 251-9 Tremont.

### A. J. COBURN & CO. Automobiles & Motor Cycles

Sole Agents for  
Orient, Elmore, Crestmobile, Fiedman.  
Headquarters for Famous  
French Darracq Cars  
147-153 COLUMBUS AVE., Columbus Automobile Exchange  
BOSTON, MASS.

### Columbus Automobile Exchange

147-153 Columbus Ave. BOSTON  
NEW ENGLAND AGENTS FOR  
Steam and Gasoline AUTOMOBILES  
Storage by day or month. Station always  
open. Best equipped repair shop in New  
England. Automobile Supplies of all kinds.  
New and slightly used Automobiles for sale.  
Phone 388-2 Tremont

### THE Grout Steam Carriages

Run At All Times—Not Sometimes  
GROUT BROS., ORANGE, MASS.  
Boston Agency, 43 Columbus Ave.

### U. S. Long Distance Car

BOSTON AGENCY  
G. T. GOULD, Jr., 43-45 Columbus Ave.

### "WHITE STEAMERS"

BOSTON SALESROOMS  
Tremont & Berkley Sts., Odd Fellows Bldg.  
Phone 1097 Tremont  
Stanhopes, Phaetons and Touring Cars.  
First-class Storage and Repair Stations in  
connection.



## Special Notices

Advertisements of second hand vehicles or parts  
for sale, or for Positions Wanted, inserted under  
this heading at 10c per line. Remittance must ac-  
company copy.

**FOR SALE**—Genuine bargains to close  
out stock. One Waverley Electric  
automobile in fine condition. One  
Elgin Electric automobile. The following  
machines are complete with the exception  
of power: One Runabout, painted and up-  
holstered, with tires. One Stanhope, slightly  
used but in good condition, with tires. One  
Stanhope, painted and upholstered, but with-  
out tires. One Runabout (heavier model)  
painted and upholstered, with tires. One 11  
h.-p. Gasoline Motor (2-cylinders). A few  
gears, bodies, and wheels at low prices.  
Write for prices. C. A. Coey & Co., 5311  
Cottage Grove Ave., Chicago, Ills. 27

**FOR SALE**—Model "A" Locomobile  
Touring Car, run less than 100 miles.  
Will sell at a sacrifice. Price on ap-  
plication. Address, P. O. Box 454, New  
Haven, Conn. 27

**FOR SALE**—Two Lamson motorcycles,  
2½ H.-P., been used for samples only.  
\$200-machine, price \$135. \$35 with  
order, balance on delivery. Lock Box 463,  
Abington, Mass. 6

**WANTED**—Back numbers of the  
"Motor Review," as follows:—  
All of the issue of September,  
1899; December 19, 1899. Will pay 15 cents  
per copy for first copy received of any of  
the above issues. The Class Journal Co.,  
395 Broadway, N. Y.

**WANTED**—Owners of "Toledo" Steam  
Machines, in vicinity of Chicago,  
or Cleveland, to kindly forward  
their address—likely leading to something  
of mutual advantage. "M." care Auto-  
mobile & Motor Review, 395 Broadway, New  
York. 6

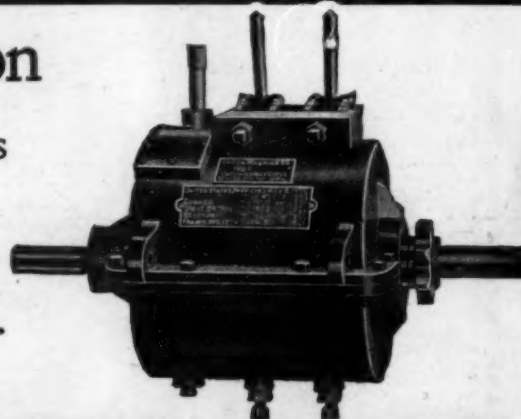
**WANTED**—July and October, 1990,  
numbers of the Automobile. If  
you have them write us and we will  
pay 20 cents each for the first copies offered.  
The Class Journal Co., 395 Broadway, N. Y.

**HOW TO BUILD A 3-H. P. LAUNCH ENGINE**—  
Working drawings with complete description  
of materials and methods for the construction of  
a gasoline motor for a launch of about 20 feet.  
By E. W. Roberts. Price \$2.50. Send order to Book  
Dep't. Motor Review, 395 Broadway, New York.

## Transmission Gear FOR AUTOMOBILES

Two Speeds Forward and Reverse  
Satisfaction Guaranteed

Upton Machine Co.  
(Works at  
Beverly, Mass.)  
17 State St., New York



### BRECHT'S ANGLE IRON FRAME RUNNING GEAR

with Combination Hanger, Radius Rod and  
Swing - Shackle



BRECHT AUTOMOBILE CO.  
1203 Cass Avenue ST. LOUIS, MO.

### GOING TOURING? FIRST EQUIP YOUR AUTO WITH

## NEVERMYSS

We practically insure your machine for \$3. This  
means you are absolutely safe from loss by fire.  
The NEVERMYSS Fire Extinguisher Co. (Inc.)  
MAIN OFFICE AND FACTORY, WATERBURY, CONN.

### HERBERT L. TOWLE Automobile and Gas Engine Designer

Gasoline Speed Launches  
Mechanical and Patent Office Drawings  
116 NASSAU ST. NEW YORK  
Telephone 590 John

### FOLDING RUBBER AUTO BUCKET



C. S. KNOWLES, 7 Arch St., BOSTON

### Running GEARS

Also Automobile Steam Engines

Send for Circular

### SHAEFFER, BUNCE & CO.,

Successors to Shaeffer, Bunce & Marvin  
142 Main St. Lockport, N. Y.

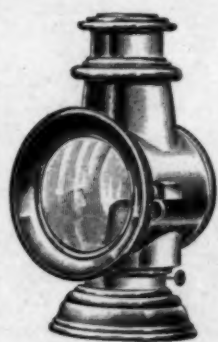
## WE CAN SELL YOUR AUTO

whether a \$15,000 Panhard or a motor cycle made with your  
own hands. We have customers for any and all kinds. Oldest  
established general Automobile Agency in the United States.

REFERENCE: The Publishers of this Paper  
DU ROIS' AUTOMOBILE AGENCY, 220 Broadway, New York

WHEN ANSWERING ADVERTISEMENTS, PLEASE MENTION THE AUTOMOBILE AND MOTOR REVIEW.





## Peck Auto Lamps Deserve Your Careful Consideration!

We have been telling the truth about these lamps from week to week—not the whole truth, but some portion of it in various chapters. HERE IS ANOTHER CHAPTER:

**PEOPLE SAY:** "The best lamp on the market."—*New York Dealer.*

"The brightest light—will not bother with my gas lamp any longer."—*Man of Business.*

"Burns perfectly—rough roads won't put it out."—*Our friend, the Doctor.*

"Pleased with its appearance—finest finish we ever saw."—*Well-known Manufacturer*

**WE CLAIM—Light, Construction, Material and Finish Second to None**

IT WILL PAY YOU TO INVESTIGATE. BURNS KEROSENE.

**The Scoville & Peck Co., MAKERS New Haven, Conn.**

New York Office, 83 Chambers St.

Get our catalogue for sizes and prices—also showing various styles of finish

## MACHINE WORK

Have your MODELS OF ENGINES, etc., made, and small MACHINE WORK done in a thoroughly equipped machine shop. ESTIMATES CHEERFULLY GIVEN. Rate, 50 Cents per Hour.

**H. BARTOL BRAZIER**

Engineer and Machinist. Mfr. of Gasoline Vehicles.  
1811-13-15 Fitzwater Street, PHILADELPHIA, PA.

## DO YOU RUN AN AUTO?

Do You Want to Understand Its Workings?

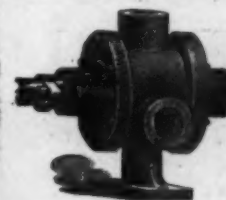
"Self-Propelled Vehicles" the new book by J. E. Homans, A.M., tells the whole story. It explains in simple, non-technical language the mechanism and management of every type of automobile. 640 pages; 500 illustrations; complete diagrams; ready reference index; a great trouble-saver. Write for booklet showing sample pages, free on request.

THEO. AUDEL & CO., Publishers, 63 Fifth Ave., New York

## DIETZ KEROSENE AUTOMOBILE LAMP

Embodies the experience gained in 60 years' of Lamp building. Send for particulars

**R. E. DIETZ COMPANY 33 LAIGHT ST. NEW YORK**



Is Your Circulation Good?

**THE LOBEE PUMP**

Increases and gives a positive circulation to the cooling water for all Gasoline Motors. Simple, Cheap, Durable, Efficient, easy to apply. Rent on trial to responsible parties.

LOBEE PUMP & MACHINERY CO.

135-144 Terrace, Buffalo, N. Y.

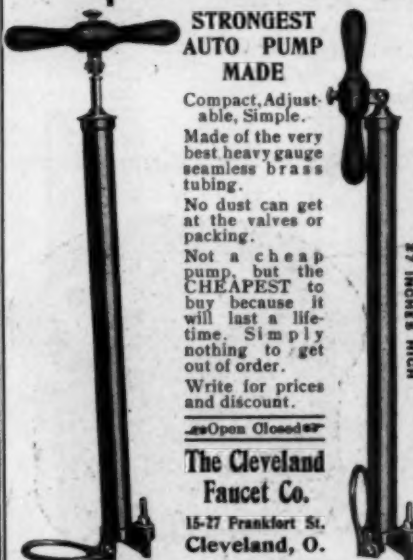
## EUREKA AUTO PUMPS

STRONGEST—BEST

**THE BISHOP & BABCOCK CO.**

CLEVELAND.

## Champion Auto PUMP



**STRONGEST AUTO PUMP MADE**

Compact, Adjustable, Simple.

Made of the very best heavy gauge seamless brass tubing.

No dust can get at the valves or packing.

Not a cheap pump, but the CHEAPEST to buy because it will last a lifetime. Simply nothing to get out of order.

Write for prices and discount.

—Open Closed—

**The Cleveland Faucet Co.**

15-17 Frankfort St. Cleveland, O.

## The VICTOR Steam Pump



Size, 9 inches by 3 inches.

Weight, 4½ pounds.

Capacity of Air Pump, 80 pounds pressure on tanks or tires.

Capacity of Water Pump, 3 gallons per minute against 200 pounds boiler pressure.

**PRICE \$30.00 EACH**

These pumps have been adopted by the Locomobile Co., the Mobile Co., and other leading manufacturers of steam carriages.

**THE VICTOR STEAM CARRIAGE**

Reliable Automatic Features

Write for full technical description

**Overman Automobile Co.**

7 East 42d Street, NEW YORK

## Incontestably The BEST



ARTICLE OF ITS KIND EVER OFFERED TO THE TRADE

SAMPLE FREE UPON APPLICATION

**The HOTELLING BROS. Co.**

268 E. 35th St., CHICAGO, ILL.

## DON'T BUILD AUTOMOBILES

UNLESS YOU EQUIP THEM WITH

**THE RAYMOND BRAKE**

Adapted to Any Style of Construction  
Send for illustrated circular

**A. H. RAYMOND**

BRIDGEPORT, CONN.



## CAMERON BOILERS = BURNERS = ENGINES

Water tube  
Perfect circulation  
No screwed joints  
More than 29 feet of  
heating surface  
for its weight than  
any boiler made.  
Weight, 80 lbs.

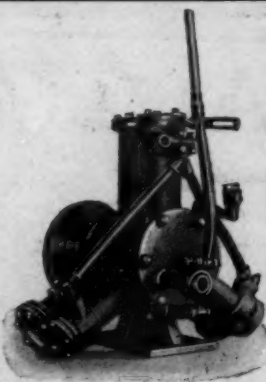
FOR  
**AUTOMOBILE  
AND  
MARINE WORK**

KEROSENE BURNERS

Send for descriptive matter

TAUNTON AUTOMOBILE CO.,

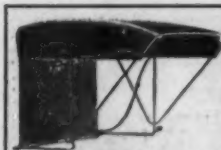
TAUNTON, MASS.



3 Cylinder  
No stuffing boxes,  
slides, or crossheads  
1 crank, 1 eccentric  
No dead center. 1  
lubricator. Weight,  
70 lbs. 10 H.P. at  
150 lbs. steam pressure



C. R. WILSON CARRIAGE CO.  
Detroit, Mich.



**AUTOMOBILE  
SEATS, TOPS  
and  
TRIMMINGS.**

Workmanship and  
material first-class.

C. H. HALLIDAY, Oneida, N.Y.



Largest Auto Body Manufacturers  
FRATZ BODY MFG. CO. AKRON, OHIO

*Detroit Mfg Co.*  
DETROIT, MICH.

Expert Makers  
Auto Bodies,  
Tops, Cushions,  
Backs Etc.

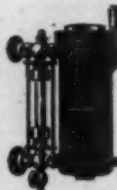
This cut shows the tail-board down,  
creating room for two additional pas-  
sengers. When closed up it makes  
an ideal one-seated vehicle.

1902 PATTERN

MADE BY THE



CINCINNATI PANEL CO.,  
CINCINNATI, OHIO.



### Save Your Nerves

BY APPLYING A  
**Reliance Low Water Alarm**

TO YOUR STEAM VEHICLE

SEND FOR ILLUSTRATED CIRCULAR

Reliance Gauge Column Co.  
CLEVELAND, OHIO

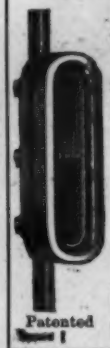


The Cheapest RELIABLE Safety-Water  
Column that has ever been brought out is the

### "AUTO-PET"

It is small, reliable, durable and positive.  
Made by the

Jarvis Engine and Machine Works  
LANSING, MICH.



### RELIABLE Water Gauges

Never Break! Easy to Attach!

Price \$7.50

Gauges for Boilers of All De-  
scriptions.

Don't Use Infringements.  
Write for circular.

Reliable Water Gauge Co.  
9th & Chestnut Sts., ST. LOUIS, MO.

### Gasoline AUTO HAND TORCH

This torch generates so  
easily it only requires the  
heat of one match to light  
and generate it.

Reservoir, 1 1/4 x 5 inches

PRICE \$2.00 Each

The Turner Brass Works  
62 No. Franklin St., Chicago, Ill.



### BOILERS

The Oldest and Largest Automobile Boiler  
Company making Automobile Boilers exclu-  
sively. We know our boilers are the best  
made. Now making boilers for most of the  
steam carriage builders. Can make any kind.  
All work guaranteed. Write for particulars.  
Repair work economically done. Our boilers  
received first prize for lowest fuel consump-  
tion in Long Island Endurance Contest. Can-  
non's racing car, equipped with our 24 inch  
boiler, made 1-2 mile in 29 4-5 sec.; 300 pounds  
steam at start, 306 lbs. at finish, and 5 miles in 8 m. 26 3-5 s.

Steam Carriage Boiler Co., Oswego, N.Y.

**K  
L  
I  
N  
G  
E  
R  
  
GAUGES**

The only gauge glass made  
for automobile use which  
does not explode.  
No lamp and no extra glass-  
es needed.  
We have a large supply of  
these gauges in stock.

Locke Regulator Co.  
Salem, Mass., U.S.A.  
Send for Catalogue "C"



### Are You Getting Ready for Next Season?

You will need first-class  
PATTERNS to expect  
the best results.  
We make ACCURATE  
patterns. Let us figure  
on your work.

Balkwill Pattern Works  
970 Hamilton St.  
CLEVELAND, OHIO

### TONKIN Dry Plate Boilers & Kerosene Burners FOR AUTOMOBILES.

Tonkin  
Boiler  
Co.,

Oswego,  
N. Y.





# ALL MILE RECORDS BROKEN

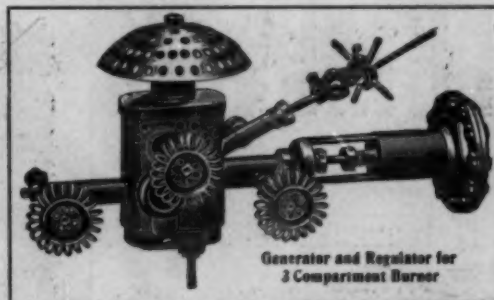
By the Cannon Racer Equipped with the REGULAR DESIGN

## FORG GASOLINE BURNER



3 Compartment Burner with Generator and Regulator.

It was the severest TEST possible, the result of the race depending on the amount of HEAT GENERATED and RETAINED during the entire distance, which showed conclusively that the FORG BURNER was equal to the occasion.



Generator and Regulator for 3 Compartment Burner

**Remember** The Burner makes or unmakes the *Steam Carriage*, and insist on getting what you pay for—*The Best*. You cannot afford to experiment, as *substitutes* cost the same as the original FORG GASOLINE BURNERS.

Burners for 14, 16 and 18-inch Boilers Made with Single Compartment.

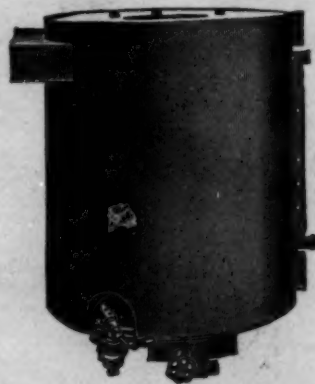
Burners for 20, 22 and 24-inch Boilers Made with Three Compartments.

**PETER FORG**

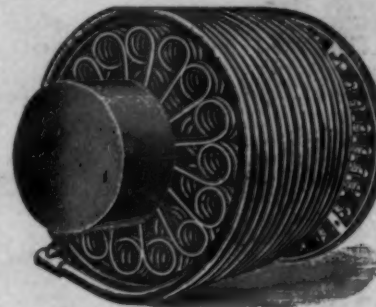
Special Sizes and Shapes Made to Order.

Write for Descriptive Catalogue

**Somerville, Mass.**



**H. B. BACHELDER**  
259 Mt. Vernon



LOWELL, MASS., AUGUST 15, 1902

The SALAMANDRINE BOILER CO., 220 Broadway, N. Y.

GENTLEMEN:—The **Salamandrine Boiler** in my machine is giving me the **best of satisfaction**, it is **worth its cost alone** from the ease one feels that even if you lose sight of your water the boiler will **not burn out**. I also find that **heavy winds** have **little or no effect** on its **steaming qualities**, the burner never bothers by **burning back**, and I have never yet had the **fire blow out in the wind**.

The last two Sundays I drove my carriage one hundred miles each day and most of the time the safety valve was **blowing at 260 lbs.** I had to slow up for steam but once or twice on bad hills, but through no fault of the **boiler**, my engine cylinders and valves were very dry through the inoperation of the oil cup, in fact so dry that I could hardly throw the reversing lever; I doubt if with a tubular boiler I could have moved at all, I have had a steam carriage two years and I cannot express the **relief and confidence** I feel in your **boiler** whenever I steam up. With the tubular boiler your pleasure is always somewhat marred (especially if one is used to a steam plant) by that feeling of anxiety about the water line; in yours I find the relief is, as I said before, **worth the price of the boiler without considering its other advantages**.

You are at perfect liberty to refer anyone to me, for I cannot praise it too highly and shall be pleased to demonstrate it to anyone you may send to me in this section. Wishing you success, I am,

Yours truly,

(Signed) H. B. BACHELDER, 259 Mt. Vernon St., Lowell, Mass.

--SPELTER, SOLDER, and BRAZING WIRE--  
**WATERBURY BRASS CO.**  
 Tubes, Rods and Sheet  
 (Brass and Copper) . . .  
 WRITE US FOR PRICES  
 Main Office and Factory, Waterbury, Conn.

Automobile work a specialty  
**BRASS, BRONZE and** ---  
 --- **ALUMINUM CASTINGS**  
 All work done promptly.  
 Write us for prices. . .  
**C. E. ROGER, 34 Beach St., BOSTON**

# ALUMINUM

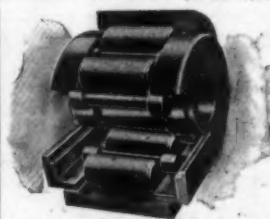
**THE PITTSBURGH REDUCTION CO.**  
 PITTSBURGH, PA.

Aluminum Automobile Parts a Specialty

**Randolph-Clowes Co.**  
 WATERBURY, CONN.  
 Brass and Copper Rolling Mills  
 AND  
 Seamless Tube Works

**Seamless Copper Shells**  
 FOR  
 AIR, GASOLINE AND  
 MUFFLER TANKS  
**Copper Tubes and Shells**  
 FOR  
 AUTOMOBILE BOILERS

BRANCH OFFICE  
 NEW YORK CHICAGO  
 715 Postal Tel. Bldg. 602 Fisher Bldg.



**A. R. B.**

Cut Open  
and  
Unrolled

The A. R. B. Has Proved Itself the  
 Most Durable and Efficient  
 Bearing Ever Produced.

Artillery Hubs Rear Axle Bearing.

WRITE FOR NEW BOOKLET  
 Western Dept., K. FRANKLIN PETERSON,  
 165 LAKE STREET, CHICAGO, ILL.

LIGHT AND MEDIUM WEIGHT  
**MALLEABLE  
 IRON CASTINGS**  
 TO ORDER.  
 PROMPT SERVICE. SMOOTH AND  
 WELL ANNEALED CASTINGS.  
 THE  
**CHISHOLM & MOORE MFG CO.**  
 CLEVELAND, OHIO.

# SHELBY

## SEAMLESS STEEL TUBING

in your automobile  
 means a *successful* and  
*satisfactory product.*

You cannot afford to  
 take chances with *un-  
 tried* material.

Send us your specifications

**Shelby Steel Tube Co.**

WESTERN REPRESENTATIVE  
 Western Union Bldg., Chicago

GENERAL SALES OFFICES  
**PITTSBURG, PA.**

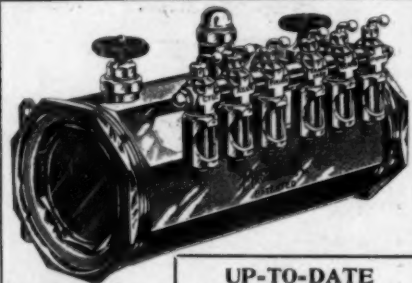
# DIXON'S LUBRICATING GRAPHITES

FOR  
 Steam, Gas or Electric  
 Automobiles

Are Accorded the Highest Testimonials.  
 Send for Free Samples and Pamphlet.

**JOSEPH DIXON CRUCIBLE CO.**  
 JERSEY CITY, N. J.

## AUTOMATIC LUBRICATION

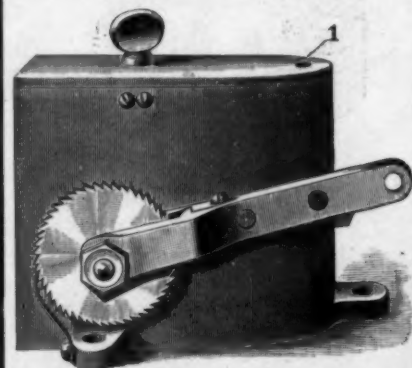


**AUTOMATIC  
 LUBRICATOR CO.**  
 714 Church St.  
 TOLEDO, OHIO

**UP-TO-DATE  
 OILING DEVICES**

For Stationary,  
 Marine, Automobile  
 and all  
**EXPLOSIVE MOTORS**

# THE CARTER AUTOMATIC CYLINDER LUBRICATOR



Requires no Attention or Regulating.  
 Supplies a uniform amount of oil at all  
 times. Easily attached. **PRICE, Quart Size,**

**\$10.00**

**B. J. CARTER**  
 Jackson, Mich.





ROLL TOP CABINET

### BOWSER CABINETS

Keep oils free from dust and dirt and prevents all loss from waste and leakage

A Dozen Different Styles

Catalogue "J. J." Explains Fully

## YOUR AUTOMOBILE STABLE

IS

### Not Fully Equipped

Until You Have Installed

### THE BOWSER Adjustable Measuse OIL CABINET

for the storing and handling of your

### COSTLY LUBRICATING OILS

No waste of oil or time  
No use of measures or funnels  
No dirty, oil-soaked floors  
No use for cotton 'waste' and so  
No danger of fire

"Oiler"  
Filled  
at One  
Stroke

HENCE IT IS

### ECONOMICAL, CONVENIENT, CLEAN, SATISFACTORY

Pumps accurate Quarts, Pints and Half Pints or  
Pints, Half Pints and Quarter Pints.

**S. F. BOWSER & CO.**  
FORT WAYNE, INDIANA

## STANDARD OIL CO. STOVE GASOLINE

**S**TOVE Gasoline made by the Standard Oil Co. is *especially* adapted for use in automobiles, locomobiles, naphtha launches, marine and stationary engines.

For *safety*, *speed* and *economy* specially treated naphtha is necessary for machinery above mentioned.

Our Stove Gasoline has peculiar advantages for these uses, due to improved methods of manufacture, and can be obtained from dealers in any town or city in the United States.

For full information address **STANDARD OIL CO.**

**BEST CREAM WIPING WASTE**  
NO LINT.  
**BEST STEAM ENGINE OIL and**  
**SPECIAL COLD TEST GAS ENGINE OIL**  
Put up in 1, 5 and 10 gallon cans under  
dealer's label if desired  
**SALEM CHEMICAL & SUPPLY CO. Salem, Mass.**



Lubricators, Oilers, Grease Cups, &c.  
FOR GASOLINE ENGINES

WRITE US FOR PARTICULARS

The G. B. Essex Brass Co.  
DETROIT, MICH.

## Monogram Oils & Greases

Specially adapted for Automobile Lubrication  
Write for catalog and price list

Columbia Lubricants Co. 22 Burling Slip  
NEW YORK



**MUFFLERS COOLERS**  
Gasoline **TANKS** Water  
We make a specialty of Sheet Metal Work for  
Gasoline Engine and Automobile Makers  
**STAMPING DIE MAKING**  
**BRISCOE MFG. CO.** Woodward Ave. and  
Subway, DETROIT

## Gasoline Storage Tanks

Floor or Underground.  
GASOLINE PUMPS—Lift and Measuring

**F. Cortez Wilson & Co., Chicago**

IT WILL PAY YOU TO SOLICIT subscrip-  
tions for the **AUTOMOBILE AND MOTOR**  
**REVIEW.** For full information address The  
Class Journal Co., 395 Broadway, New York

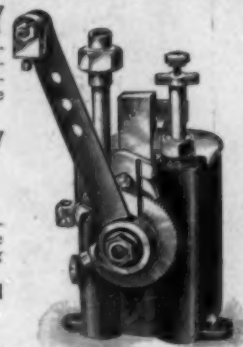
### SAVE MONEY

by saving your cy-  
linders and oil. Al-  
so save your tem-  
per and your time  
by using the

**Improved Pony  
Rochester  
Lubricator**

It furnishes lubri-  
cation when the  
carriage is running  
and only then.

**Greene, Tweed  
& Co.**  
17 Murray Street  
NEW YORK, N. Y.





THIS IS A SAMPLE of Automobile Work we make to your specification or from blue print ::

WHAT CAN WE DO FOR YOU?

JOS. DYSON & SON HAMILTON AND KIRTLAND STS. CLEVELAND, O.

## The Construction of a Gasoline Motor Vehicle

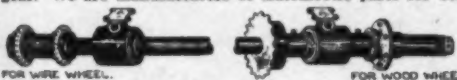
BY C. C. BRAMWELL

\$2.00

Address Book Dept., The Class Journal Co.  
395 - 399 Broadway :: New York City

\$2.00

**OUR SOLID AXLES** are very superior in durability and ease of running. We use them in the building of our 1902 roadless gear. We are manufacturers of Automobile parts for both steam and gasoline vehicles: our outfits are something remarkable. Buy direct from the manufacturer and you will be sure to get the best, and will also save the profits of the retailer. We are the Western Agents for the Locke Regulator Co., Jannet, Steinmetz & Co., and the Brown-Lipe Gear Co., and other well-known concerns, which enables us to carry a full stock of first-class goods. Burners, regulators, valves, differentials and seamless steel boiler shells and tanks.



NEUSTADT-PERRY CO.

NEUSTADT-PERRY COMPANY, 826 to 830 S. 18th Street, St. Louis, U.S.A.



## AUTO STEERING WHEELS

Sheet Metal-plated or Enameled Spider.  
Assembled in Laminated Wood Rims.

LIGHT - STRONG - PRICES RIGHT

Otto Konigslow CLEVELAND OHIO, U.S.A.

K. Franklin Peterson, Sales Agt., 165 Lake St., Chicago

Distributing Agent—Chas. E. Miller, 97-101 Reade St., New York

IT WILL PAY YOU to solicit subscriptions for the **AUTOMOBILE AND MOTOR REVIEW**. For full information address Class Journal Co., 395 Broadway, N. Y.

# RIMS <sup>FOR WOOD WIRE AND TUBULAR</sup> WHEELS

The Standard Welding Co.

CLEVELAND, OHIO



No. 0-A

## B B Adjustable LIFTING JACKS FOR AUTOMOBILES

No. 0-A ADJUSTS FROM 9 1/2 in. to 19 in.  
CAPACITY, - - 1,500 LBS.  
PRICE, - - - \$2.00

No. 1 ADJUSTS FROM 12 in. to 19 in.  
CAPACITY, - - 2,000 LBS.  
PRICE, - - - \$2.75

BRAY MFG. CO., 115 Broadway, New York

CHICAGO OFFICE, 58 FIFTH AVENUE

Delivered FREE East of the Rocky Mountains on receipt of Price



No. 1

WHEN ANSWERING ADVERTISEMENTS, PLEASE MENTION THE AUTOMOBILE AND MOTOR REVIEW.

# WHEELS

TUBULAR STEEL WHEELS

Strong  
Neat  
Durable

Write for our NEW CATALOG

AMERICAN TUBULAR  
WHEEL CO. Pittsburg, Pa.



**THIS BATTERY**

will Ignite  
Your  
GAS  
ENGINE  
Every  
Time

Used by the Most Experienced Owners

Send for Price List

**WM. ROCHE** Inventor and Manufacturer  
42 Vesey Street, NEW YORK

## Portable Rheostats

which enable you to charge your storage batteries from any Edison station or trolley station, while touring.

Also equipments for private stables and for charging stables.

## The Cutler-Hammer Mfg. Co.

MILWAUKEE, WIS.

136 Liberty Street,  
NEW YORK.

Monadnock Block,  
CHICAGO.

## GOULD Storage Battery

FOR AUTOMOBILES



OVER  
25,000  
CELLS IN  
SERVICE



GREATEST  
MILEAGE  
COMBINED  
WITH  
LONGEST  
LIFE

**GOULD STORAGE BATTERY CO.**  
25 West 33d Street, - - NEW YORK CITY

IT WILL PAY YOU TO SOLICIT subscriptions for the AUTOMOBILE AND MOTOR REVIEW. For full information address The Class Journal Co., 395 Broadway, New York



### For Testing Batteries Use The Eldredge Battery Voltmeter

0 to 3.0 to 6.0 to 10 Volts. Dead Beat

A very convenient and practical instrument for all users of batteries, either primary or storage. The strong connecting-posts have non-removable nuts

**ELDRIDGE ELECTRIC MFG. CO.,**  
Springfield, Mass., U.S.A.

### Monkeys Try to Imitate



The illustration shows The Pig Tail Monkey trying to catch an idea. This species of monkey is credited with being the most intelligent of American monkeys. He knows that Dyke's Float Feed Carburettor, Dyke's Wheel Steering Device, Dyke's Flexible Reachless Running Gears, Dyke's Engines and other devices are giving satisfaction. He is going to TRY and imitate them—monkey fashion, of course.

Dyke's Bike  
Motor Vaporizer  
Is Our Latest.

Automobile Supplies a Plenty.

**A. L. DYKE**  
ST. LOUIS, MO.  
MANUFACTURER.  
(Originator first auto-supply business in America)

## A Spark Every Time



### All the Time

By this we mean that EVERY TIME a spark is due in the explosion chamber, it will occur if this Dynamo is used.

"A lot depends on the Dynamo."

We have interesting booklets

**THE CARLISLE & FINCH CO.**  
223 E. Clinton Ave., Cincinnati, Ohio

## WONDERFUL RESULTS ...WITH... MOSLER SPIT-FIRE PLUG



Patented April, 1902  
Protected Porcelain and Sparking Points. Special Nickel Rod with screw adjustment for accurately setting distance between sparking points. No platinum to bend—none to break. Can't be short circuited. Reversible Porcelain, double life. Any standard French or American threads. 1/2 in. and 3/4 in. pipe threads. Metric thread and blanks in stock. PRICE \$2.50 complete. Agents Wanted. Write for Leaflet.

**A. R. Mosler**  
309 Broadway New York  
Cor. Duane St. Phone 1504A Franklin

## We Lead the World

In the manufacture of Jump Spark Ignition Apparatus. Our catalog will convince you of this fact. Write for it.

### American Coil Co.

BOX 20

W. SOMERVILLE, MASS.



Only Spark Plug GUARANTEED!

### PERFECTION

Order by name. Substitutes cost the same. Sold by leading jobbers everywhere.

**American Mach. Mfg. Co.**  
50 W. 2d St. Boston, Mass.

## The HOWARD SYSTEM

Indispensable for Starting Fire on Steam Automobiles

No preliminary heating; starts a gasoline burner instantaneously with a match, like a gas burner. Safe, quick and clean. A postal card will tell you all about it.

**J. F. Hathaway, 31 Chester St., W. Somerville, Mass.**

## Radiating Coils

FOR GASOLINE CARRIAGES

Special Designs Built to Order Promptly

**THE TUBE BENDING MACHINE CO.**  
10 Gouverneur Slip, New York

### THE NEW

## Henricks Igniter

IS SUPERIOR TO ALL OTHERS.

Especially adapted to Marine and Automobile Engines

Successfully works Jump Spark Coil

BOOKLET FREE

**Henricks Novelty Co.** 617-619 So. Illinois St. INDIANAPOLIS, IND.

## AULTMAN RADIATOR



PATENT PENDING

The most efficient yet shown.

Star Shape, Copper Tubes, with Copper Tube Core. All the water is in thin sheets in the points of the star—air passes in center of the tubes. Five tubes, 24 inches long, are sufficient for four horse power engine. Price \$12.50.

**THE AULTMAN CO., Canton, Ohio**

**THE MUELLER SPARK COIL**

gives a spark one and a half to two inches long, which will always cross the intervening gap. It will work several cylinders with one coil, and can be used with or without a vibrator. Weight, complete, 4 1/2 lbs. It has a very rapid vibrator, wide range of adjustment, and is positively guaranteed not to break down under a severe test. We will send sample to responsible parties subject to return at our expense. Net cash price \$10. DEMAND THE MUELLER SPARK COIL AND YOUR IGNITION TROUBLES WILL CEASE.

**HERMAN C. MUELLER,**  
363 Scott Street, :: :: Milwaukee, Wis.

## H-U. 50<sup>m</sup> Accumulators

Non-Infringing

Light Weight

Long Mileage

Durability

**HELIOS-UPTON CO. CHICAGO, ILL.**

It will pay you to solicit subscriptions to the "Automobile and Motor Review"  
For information address Class Journal Co., 395 Broadway, New York

## THE APPLE IGNITER

YOUR Automobile is not complete without it. They are well built and nicely finished. Entirely enclosed, making them dirt and water proof with means for easy access as shown by cuts.

Write for circulars

**THE DAYTON ELECTRICAL MFG. CO.**

168 ST. CLAIR ST., DAYTON, O.  
Philadelphia Office, The Bourse. Chicago Office, 19-21 La Salle St. New York Stock carried by Chas. E. Miller, 97 Reade St. St. Louis Stock carried by A. L. Dyke, 1422 Pine St.



Dynamo with door closed



Dynamo with door open

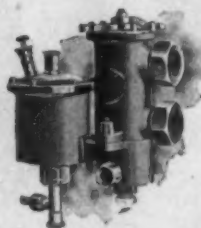


## A Truscott Boat

Simple Safe Reliable Speedy

Made all sizes and styles from 16 ft. upward. Engines 1 to 40 h.-p. Better boats or machinery cannot be made. Catalog for the asking.

**TRUSCOTT BOAT MFG. CO.**  
BOX A :: ST. JOSEPH, MICH.



We can now supply the American-made LONGUEMARE CARBURETOR, which has been on the market in France for five years, during which time over 16,000 have been sold. All the world's records in France have been made with the use of this carburetor, and all the principal races since 1898 have been won with its use. Its makers were awarded a gold medal at the Paris Exposition of 1900, and they have received other honors too numerous to mention.

It is used in France and Belgium by such firms as Aster, Renault, Darracq, Fouillaron Corre, Decauville, Prunel, Peugeot, la Compagnie Francaise, Deschamps and Pieper.

Catalogue and prices sent on application. Give size of inlet and H.-P. of motor.

**The Holley Motor Co.,** - 17 Holley Avenue  
BRADFORD, PA.

## IMPORTED SPARK PLUGS

GENUINE FRENCH PORCELAIN SPARK PLUGS. Considered the best plug on the market. Metric size to fit French Motors, and 1/2 inch pipe size to fit American Motors. **PRICE**

**\$1.00 EACH**

by mail. Discount to the trade. Catalogue for the asking.

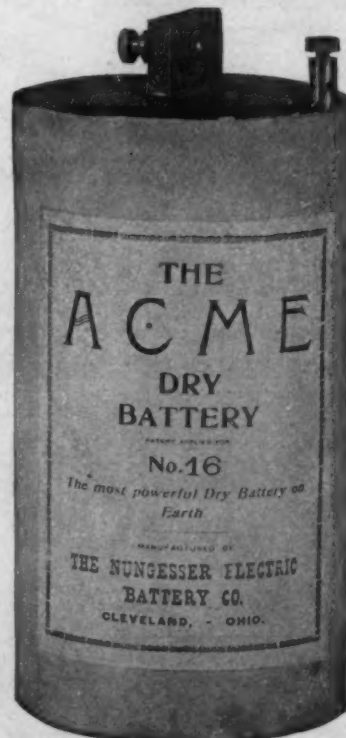
THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

**CHAS. E. MILLER, 97-99-101 Reade St., N. Y. City**

MANUFACTURER, JOBBER, EXPORTER AND IMPORTER

## The No. 16 ACME DRY BATTERY

THE MOST POWERFUL BATTERY  
ON EARTH FOR AUTOMOBILE SERVICE



Size 9 3/4 in. Diameter x 8 in. High

For strength, durability and recuperation the No. 16 has never been equalled. If you give this battery a trial you will use no other in the future.

## THE NUNGESSER Improved Spark Coil

FOR IGNITING HIGH SPEED  
GASOLINE ENGINES ON AUTOMOBILES,  
PLEASURE YACHTS, ETC.



Length of Coil 6 in. Diameter 2 3/4 in.

The most perfect and reliable ignition on High Speed Engines with the least possible consumption of current.

Manufactured by

**The Nungesser Electric Battery Co.**

27-33 KING ST.

CLEVELAND, OHIO, U.S.A.

THOS. G. GRIER, Western Representative  
128 W. Jackson Bl'vd, Chicago, Ill.



THIS IS  
**"THE ENGINE THAT SCOTT BUILDS"**

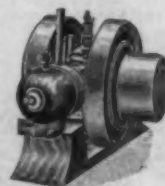


All Bearings are Removable, Interchangeable and Get-at-able without disturbing any part or dismantling the motor.

You have been looking for this motor.

Write for full description.

**J. A. SCOTT MOTOR WORKS, 2114 Washington Ave., ST. LOUIS, MO.**



**The SMELSER**  
 Gas & Gasoline Engines

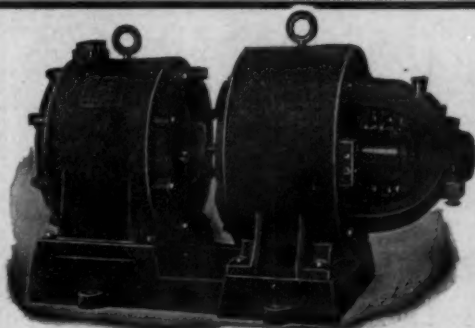
Simple, Reliable, Powerful and Easily Operated. For Automobiles, Launches and Stationary Use, 3 to 15 h.p. Send for catalogue.  
**The Smelser Engine Co. FRANKTON, IND.**

**"The Rutenber"**

Factory: Logansport, Ind.

Water-Cooled, Four Cycle, Upright Gasoline Motors. Two and Four Cylinder Type. From 3 to 60 H.P. for Automobiles and Launches. From 10 to 150 H.P. for Stationary Purposes.

Also AUTOMOBILES of every style—DELIVERY WAGONS, OMNIBUSES and AUTO TRUCKS. Send for prices. **The Rutenber Manufacturing Co., Room 207, 115 Dearborn St., Chicago.**



One Kilowatt Capacity  
**MOTOR GENERATOR SET**  
 for Charging Automobile Batteries in Private or Public Auto Stable

WE ARE MANUFACTURERS OF THE

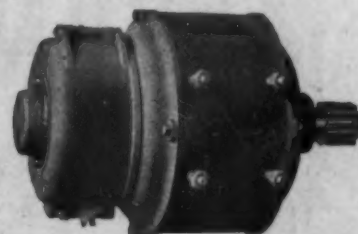
**Standard Electric Motors**

THAT ARE NOW USED ON ALL THE MOST SUCCESSFUL ELECTRIC AUTOMOBILES in the country

Our machine is the **MOST EFFICIENT and PRACTICAL OF THEM ALL** — as demonstrated by hundreds of them in daily use all over the country.

**THE ELWELL-PARKER ELECTRIC CO. CLEVELAND, OHIO**

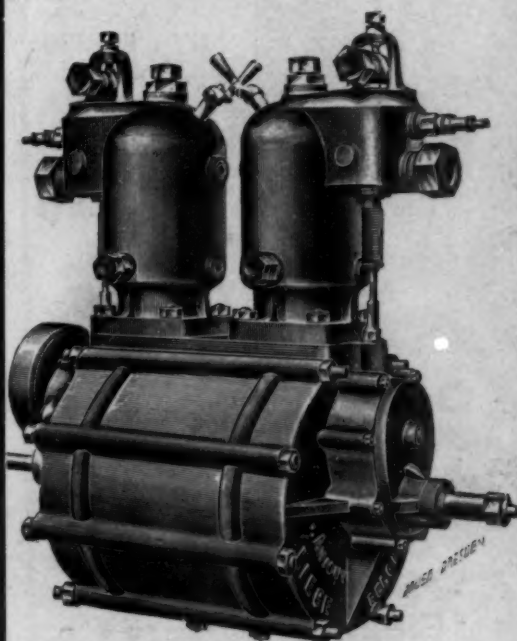
"The motor that develops such wonderful power."



**KELECOM MOTORS**

(IMPORTED)

Hydro-Carbon Water-Cooled



**PERFECT** record in Long Island Automobile Club's Endurance Run. A 5 h.p. Kelecom Motor, fitted in a carriage weighting 822 pounds, carrying two passengers, went through without a single stop ahead of its class, and as per official measurement used only 3 1/2 gallons of gasoline.

Single Cylinder, Five and Seven Horse-Power. Double Cylinder Nine and Eleven Horse-Power

**Kelecom Bicycle Motors**

1 1/2 h.p. Air Cooled. Weight 33 lbs.

We Manufacture Special Acetylene Headlights for Automobiles.

Send for Latest Catalogue No. 3—Just Out

**A. H. FUNKE, 98 Duane St., New York**

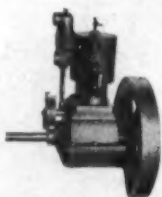
Do you understand  
 Gas or Internal Combustion Engines?

Send for our catalogue of books on this subject

Book Department  
**The Class Journal Co.**  
 395 Broadway, N.Y.

### H. L. Hoffman Motor Co. JOLIET, ILL.

Manufacturers of Single 4 h.p., Double 7 h.p., Double Cylinder 16 h.p. Gasoline, Automobile or Marine, 4 Cycle Motors. Either Horizontal or Vertical. Fully guaranteed. Prices the lowest. Your patronage is solicited.



### WE ARE MANUFACTURERS OF ENGINES STEAM and GAS

FOR AUTOMOBILE AND MARINE WORK.

Send for our catalogue and let us figure on your work.

**B. & P. COMPANY** 128-130-132 Ferry Street  
Milwaukee, Wis.

## MASON

IS THE NAME OF THE BEST

### AUTO ENGINES AND APPLIANCES

SEND FOR FREE ILLUSTRATED CATALOG  
MENTIONING THIS JOURNAL

**THE MASON REGULATOR CO**  
158 Summer St., BOSTON

### Simplicity Durability Finest Workmanship

These are the Points of Excellence  
found in the

### "Watkins" Marine Gas Engine

If interested send for  
Catalogue and prices

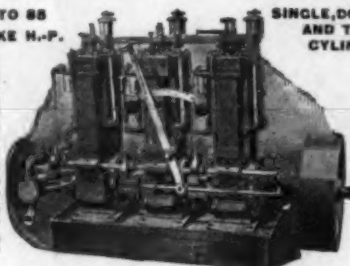
**The Frank M. Watkins Mfg. Co.**  
539 BAYMILLER ST.  
CINCINNATI, OHIO

### Wolverine Marine Engines

2 TO 88  
BRAKE H.P.

SINGLE, DOUBLE  
AND TRIPLE  
CYLINDERS

LAUNCHES  
18 TO 75 FT. IN LENGTH



2 AND 4 CYCLE  
ENGINES

15 H.P. SELF-STARTING MARINE ENGINE

**Wolverine Motor Works**  
GRAND RAPIDS, MICH.

## SUBSCRIBE!

The **Automobile and Motor Review** will enable you to intelligently discuss all automobile topics.

**SMALL SPRINGS** OF ALL DESCRIPTIONS  
ALSO THOSE USED BY MOTOR VEHICLE MANUFACTURERS  
**DUNBAR BROTHERS**  
ESTABLISHED IN 1845 BRISTOL CONN.

### If Your Springs Are Giving You Trouble, Write Us



We are making a Specialty of a Strictly High Grade Spring for Automobiles. They are tempered in oil, and for easy riding and durability cannot be surpassed

**GARDEN CITY SPRING WORKS**  
CHICAGO, ILL., U.S.A.

.. THE ..

### Cleveland Wire Spring Co.

CLEVELAND, OHIO

Manufacturers of

### HIGH GRADE, OIL TEMPERED Spiral Steel Wire Springs

OF ALL DESCRIPTIONS



## SPRINGS

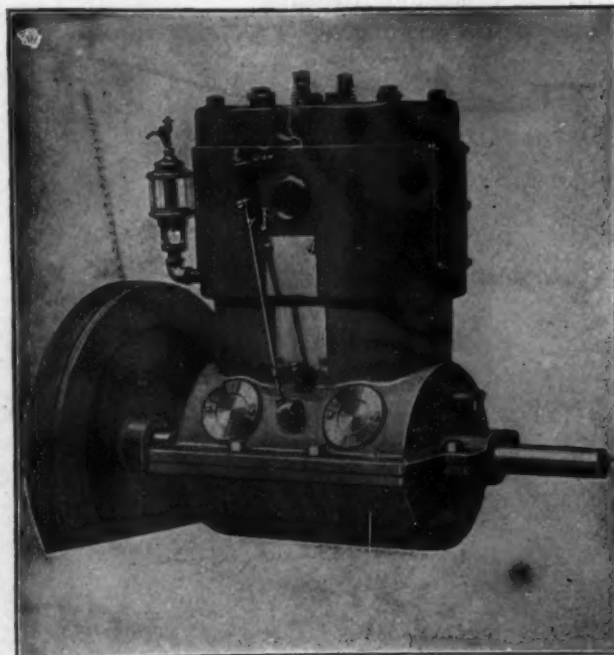
ALL THOSE USED  
BY MOTOR  
BUILDERS

### The Wallace Barnes Co.

BRISTOL, CONN.

SUBMIT SPECIFICATIONS FOR PRICES  
Send for new catalog just issued

## An American Motor for Americans!



NOT a FOREIGN  
REPRODUCTION



**Howard Hydro  
Carbon Motors**

..FOR..

**Automobiles  
and Launches**

**GRANT-FERRIS CO., TROY, N. Y.**



"The Automobile and Motor Review"  
Subscription, \$2 a Year 395 Broadway, New York



ARE THE SAFEST  
CARRIAGES FOR  
YOU TO OWN

Send for catalogue

White Sewing Machine Co., Cleveland, O.



Model No. 16. Price \$1,000

## "BUFFALO" "TONNEAU"

For family use and touring  
HAS NO EQUAL

Climbs grades of 25 per cent. Speed, 25 miles per hour. Easy to operate, and control. Double Acting Brake. Economical both in fuel and repairs.

A Marvel of Simplicity

E. R. THOMAS — World Record Motors



Model No. 4, Price \$175. Model No. 3, Price \$150

THOMAS "AUTO-BI"

Holds Records for Speed, and covering long distances, etc.

Buffalo Automobile & Auto-Bi Co.  
1190-1200 NIAGARA ST.  
BUFFALO, N. Y., U. S. A.

Boston Headquarters New York Headquarters  
174 Columbus Ave. 29 W. 43d St.

Write for Catalogue. Agents wanted

### The Tires

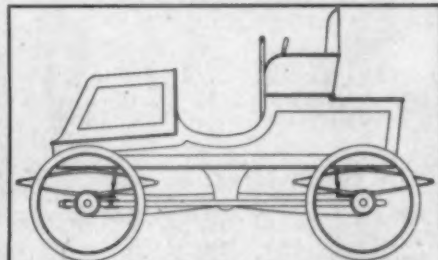
on an automobile either increase or retard its speed. Resilient tires give additional power and greater mileage.



### G & J Detachable Tires

have been proven the speediest of all vehicle tires, and they wear longest. Descriptive Catalog and full information on request.

**G & J TIRE Co.**  
INDIANAPOLIS, IND.



No road too slippery, muddy or sandy for the  
**COTTA FOUR WHEEL DRIVE  
STEAM TOURING CAR**

Boiler under hood in front. Engine horizontally under footboard. Running gear and complete Cars.

Agents wanted in unoccupied territory  
Cotta Automobile Co., - Rockford, Ill.

## WORLD'S RECORD

## --MUNGER--

NON-COLLAPSIBLE  
PNEUMATIC TIRES



One mile 1:09 3-5. Circular Track  
Beat 'em if you can

**MUNGER AUTOMOBILE TIRE CO.,**  
TRENTON, N. J.

## BOOKS

FOR

Automobilists and Motor Cyclists

- Construction of a Gasoline Motor Vehicle, C. C. Bramwell..... \$2 00
- Gas Engine Hand-Book, E. W. Roberts, M. E..... \$1 50
- Gas, Gasoline and Oil Vapor Engines, Gardner D. Hiscox..... \$2 50
- Gas Engine Construction, Henry V. A. Parcell and A. J. Weed.. \$2 50
- Horseless Vehicle, Automobile and Motor Cycles, G. D. Hiscox \$3 00
- The Electric Automobile, C. E. Woods ..... \$1 25

Sent Prepaid upon Receipt of Price

Address Book Department  
THE GLASS JOURNAL CO.  
395 Broadway, New York City

Send for Catalogue

"A LITTLE BOOK OF LARGER ONES"



## New Model 6 ELMORE

Vertical double cylinder motor. 3 speeds forward and reverse. Speed of carriage controlled by throttle. Latest design box front. Simple, Practical and Efficient. Agents wanted in unoccupied territory.

ELMORE MFG. COMPANY, CLYDE, OHIO

## The Prescott Steam Car

Has a Carload of Good Points  
Get Catalogue

PRESCOTT AUTOMOBILE MFG. CO.  
83 Chambers St. New York City

## "Rigs That Run"

The ST. LOUIS RIGS are truly "RIGS THAT RUN."

They are the result of four years' experience in automobile construction. Built to stand, and tested over the notoriously bad roads of the western country. Price the same as others—Simplicity, Durability and General Quality Far in Advance.



If you don't know enough about them—  
if you want a catalog—if you want  
a copy of "The New Romance,"

"ASK US"

**ST. LOUIS**  
MOTOR CARRIAGE CO.

ST. LOUIS, MO.  
Vandeventer Avenue

## The "New Era" MOTOR CAR

Simple, Reliable and Efficient. Will carry two or four people anywhere. Total weight, 950 lbs. Weight of motor, developing 7 actual horse power, 240 lbs. Easy to start. No cranking necessary. Practically noiseless. No vibration. Three gallons of gasoline sufficient for a ten hour run. Speed from 5 to 25 miles per hour. Price, \$850 f.o.b., Camden, New Jersey. Agents Wanted Everywhere. Write for Terms and Discounts.



THE AUTOMOBILE AND MARINE POWER CO., CAMDEN, NEW JERSEY

## MARSH MOTOR CYCLE

THIS IS THE MOST  
PRACTICAL AND  
RELIABLE MOTOR  
CYCLE EVER BUILT

If you have not written  
for our catalogue, do  
so at once . . .

MOTOR CYCLE MFG. CO.  
Brockton, Mass.



## The Medal Winner at the Pan-American

Best  
Design

Best  
Made

Best  
Finish

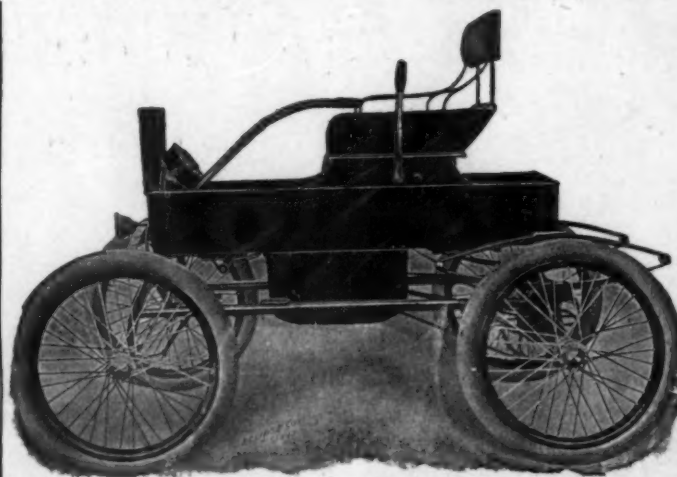
Best  
Service

Lightest  
Weight

Strongest  
Made

Most  
Durable

Best  
Control



The Lightest Draw Bar Pull of any Vehicle Made  
The Most Efficient of all Electric Vehicles

**Baker Motor Vehicle Co.**

CLEVELAND, O.

Send for Catalog

Dealers Wanted



## TRY IT AND YOU WILL BUY IT

**T**HE FRIEDMAN ROAD WAGON, point for point, is the equal of any gasoline Automobile sold in the U.S. for \$1,200, and is the only machine equipped with a Double Cylinder Four Cycle Balanced Engine that retails for less than that amount.



They will climb any grade up to 30%, and develop any speed up to 30 miles per hour. Absolute and instantaneous control. Every engine guaranteed to develop six horse-power.

Our price this year \$750.00.

Hung on platform springs front and rear.

**Friedman Automobile Company**  
3 East Van Buren Street  
Chicago, Ill.



12-Passenger Brake

## A Great Money=Maker

PERSONS INTERESTED IN AN AUTOMOBILE for either pleasure or profit should procure a copy of our Catalogue "D," illustrating STAN-HOPES, TRAPS, SURRIES, BRAKES, COMMERCIAL DELIV-ERY WAGONS, BUSES and AUTO-COACHES. :: Address

**Chicago Motor Vehicle Co.**  
370-372 Wabash Ave.  
Factory, Harvey, Ill. CHICAGO

# WINTON

Gold Medal (first award) in the official speed trials.

Silver Cup (first award) in the official hill climbing trials.

Blue Ribbon (first award) in the official 100-mile non-stop endurance trials.



WINTON TOURING CAR

It contains the simplest, most practical and best constructed motor manufactured or sold in America. :: :: ::

Our new catalog sent upon request

**The Winton Motor Carriage Co.**  
CLEVELAND, U.S.A.  
NEW YORK CHICAGO BOSTON PHILADELPHIA

## Columbia Electric AUTOMOBILES

Are best for a large class of pleasure drivers

For runabout service

For Physicians

For calling and social functions

For varied business uses



COLUMBIA RUNABOUT  
MARK XXI

Runabouts Victorias Surreys Tonneaus Cabriolets  
Broughams Hansoms Buses Wagonettes  
Patrol Wagons Chiefs' Wagons Ambulances  
Delivery Wagons Trucks Vans

WRITE FOR OUR LATEST CATALOGUE

**ELECTRIC VEHICLE CO.**  
HARTFORD, CONN.

## The ONLY Automobile that has won EVERY Endurance Contest held in America is the HAYNES=APPERSON

The most practical automobile in the world



Runabout, 6 horse-power, 2 passengers, \$1,200  
Phaeton, 8 " " 4 " 1,500  
Surrey, 8 " " 4 " 1,800

We offer you a proved reliability, ease of access to working parts and simplicity of operation that no other make in the world affords, at reasonable prices for good workmanship. Look up our records, ask our customers, get our free booklets.

HAYNES-APPERSON CO., Kokomo, Indiana

## The Conrad Steamer

Made Pittsburg to Johnstown, 81 miles over the mountains, 7 hours 45 min. No accident of any kind.

**The CONRAD MOTOR CARRIAGE Co.**

1413 Niagara St., Buffalo, N. Y.

SEND FOR CATALOGUE

## STEARNS

**Gasoline Automobiles**

Euclid & Lake View Aves. CLEVELAND, O.



DOCTORS, LAWYERS, BUSINESS MEN—

All Use the Well-Known

## Crestmobile \$600

Why? Because it is Always Reliable, Easily Handled and Runs Everywhere.

**Crest Mfg. Co.** Cambridge, Mass.

## Cleveland Automobile

6 H.P. Gasoline Runabout. A Good Hill Climber. Agencies now being appointed for 1908. Write for catalogue.

**The Hansen Automobile Co.**

Belden and Mason Aves. Cleveland, Ohio

## WATERLESS KNOXMOBILE

HAS WON HIGHEST HONORS IN ALL ENDURANCE RUNS

KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.

All Roads Alike to



**The OLDSMOBILE**

## BLUE RIBBON WINNERS

Chicago Endurance Run, THE OLDSMOBILE in the Front Rank

Conclusively demonstrating its staying powers and ability to travel rough roads, with a minimum consumption of gasoline. Why spend thousands for a ponderous racer when you are unable to buy a better or more reliable vehicle at any price? **Price \$650.** l.o.b. Detroit.

### Sales Agents

Oldsmobile Co., 138 W. 38th St., New York  
Oldsmobile Co., 1124 Connecticut Ave., Wash., D.C.  
Quaker City Auto. Co., 138 No. Broad St., Phila.  
H. B. Shuttuck & Son, 239 Columbus Ave., Boston  
Oldsmobile Co., 411 Euclid Ave., Cleveland  
William E. Metzger, 254 Jefferson Ave., Detroit  
A. F. Chase & Co., 215 So. Third St., Minneapolis  
Sutcliffe & Co., 330 Main St., Louisville  
Ralph Temple & Austrian Co., 293 Wabash Ave., Chicago  
Fisher Automobile Co., Indianapolis  
Olds Gasoline Engine Works, Omaha

George Hannan, 1455 California St., Denver  
Manufacturers Co., 97 Fremont St., San Francisco  
Banker Bros. Co., East End, Pittsburg  
C. H. Johnson, 55 So. Forsyth St., Atlanta  
Day Automobile Co., St. Louis and Kansas City  
Rochester Auto Co., Rochester  
Autovehicle Co., Newark  
F. W. Stockbridge, Paterson  
Brown, Thompson & Co., Hartford  
Hyslop Bros., Toronto  
Clark & Hawkins, Houston, Texas  
Oldsmobile Co., Milwaukee

**OLDS MOTOR WORKS, Detroit, U.S.A.**



THE INTERNATIONAL MOTOR CAR CO. builds the modern and "Frenchy"

16 Horse-Power "Toledo" Gasoline Touring Car,  
The Reliable "Toledo" Steam Carriage and  
The "Always Ready" "Waverley" Electric Runabout.

Recognized generally as leaders in their respective classes, these unequalled carriages offer the progressive dealer an especially attractive and profitable line.

CORRESPONDENCE SOLICITED CATALOGUES ON REQUEST

INTERNATIONAL MOTOR CAR CO., TOLEDO, OHIO

WAVERLEY DEPARTMENT, Indianapolis, Indiana

### BRANCH SALESROOMS

New York, 91 Fifth Ave.  
Brooklyn, 342 Flatbush Ave.

Boston, 223 Columbus Ave.  
Providence, 15 Snow St.  
Philadelphia, 909 Arch St.

Hartford, Hartford, Conn.  
Washington 817 14th St., N.W.



## STUDEBAKER AUTOMOBILES



A new electric vehicle showing radical departures in many essential features. The battery consists of 24 cells, carried in the rear of the body compartment. The motor is rigidly suspended from the frame of the gear, just in front of the battery. The battery will give a run of 40 miles on one charge, and can be recharged from any 110 volts direct current lighting circuit. In the severe test made during the last year, no breaks have occurred in running gear. It is a vehicle made for everyday use on country roads or city streets.

Send for illustrated booklet

### Studebaker Bros. Mfg. Co.

New York City, Broadway & Prince Street  
Chicago, Ill., 378-388 Wabash Ave.  
Kansas City, Mo., 810-814 Walnut St.  
San Francisco, Cal., Corner Market and Tenth Streets.

Local Agencies Everywhere.

Denver, Col., 15th and Blake Sts.  
Salt Lake City, Utah, 157-159 State Street.  
Portland, Ore., 328-334 Morrison St.  
Dallas, Texas, 194-196 Commerce Street.

Factory and Executive Office, SOUTH BEND, IND.

Look  
Look  
Look  
Look  
Look  
Look  
Look



Out!!  
Out!!  
Out!!  
Out!!  
Out!!  
Out!!  
Out!!

## LOOK OUT!!

ANOTHER STEP FORWARD  
AND YOU WILL BE IN TOUCH WITH THE

## Packard

### TONNEAU TOURING CAR

OHIO AUTOMOBILE CO., Warren, O.

Eastern Department, Adams-McMurtry Co., 317 W. 59th St., New York.  
Boston Agency, H. B. Shattuck & Son, 239 Columbus Ave., Boston.  
Chicago Agency, Pardee & Company, 1404 Michigan Boulevard.

THE almost universal winnings of the **DARRACQ CARS** in Europe lead us to publish for the benefit of our American readers an almost literal translation of a recent advertisement in French Journals of Messrs. A. Darracq et Cie, as follows:

Like at NICE—Like in CIRCUIT DU NORD—  
Like in PARIS-VIENNE! So in the

## COURSE DE COTE DE LAFFREY

All the vehicles, large or small: large carriages, light carriages, wagonettes, etc., are wiped out by the light vehicle!

## THE LIGHT CARRIAGE DARRACQ

is **FIRST** in all the classes—Is **FIRST** in general placement—Is **FIRST** and **SECOND** in light carriages, with the **BEST TIME**.

The Laffrey Hill of 7 kilometres was made in just 10 minutes by Armand Mauselin in the light Darracq vehicle, beating by six seconds the first large steam vehicle! Beating by twelve minutes last year's record and winning the prize of "L'Auto-Velo" as **VICTOR OR CONQUEROR OF ALL THE CLASSES**.

**A. DARRACQ ET CIE, À Suresnes**

The Latest Achievement made by DARRACQ Car occurred at Brighton Beach Race Track, Saturday, Aug. 23, 1902:

One Mile, 1 minute 24 seconds.

Five Miles, 6 minutes 42 seconds—eclipsing all previous records in America for this class, 1000 to 2000 lbs, by 27 1/4 secs.

## IN AMERICA DARRACQ CARS

CAN BE HAD IMMEDIATELY on application to the American Agents.

Weekly importations insure the **LATEST STYLES** and **IMMEDIATE DELIVERY**.

### American Darracq Automobile Co.

652 Hudson Street, NEW YORK

F. A. LaROCHE,  
Sales Manager

NEAR 14th ST. STATION, 9th AVE.  
ELEVATED R. R.

THE LIBRARY  
CONGR  
Two Copies  
SEP. 13  
CLASS 10  
5235  
COPY

**DURABLE**

NO JARRING  
NO STRAIN

**DIAMOND MOTOR VEHICLE TIRES**

If you are contemplating purchasing an automobile, the reliability of the machine may be correctly gauged if equipped with

**DIAMOND TIRES**

Write for valuable opinions of users.

**THE DIAMOND RUBBER CO.**

**AKRON, OHIO.**

**BRANCH STORES  
AND  
REPAIR STATIONS**

New York - 1717 Broadway  
Boston - 234 Congress Street  
Buffalo - 9 W. Seneca Street  
Philadelphia - 435 N. Broad Street  
Detroit - 310 Woodward Avenue  
Chicago - 139 Wabash Avenue



**RESILIENT**

TRADE MARK